ORDER NO. KM49906428A1
F1

# Service Manual

Simplified

Telephone Equipment

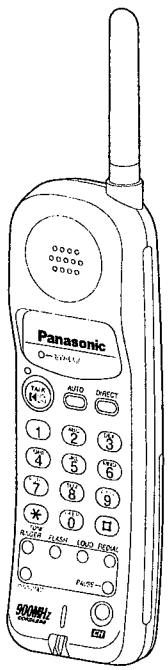
# KX-TC1405CB
# KX-TC1405CW

900MHz Cordless Phone

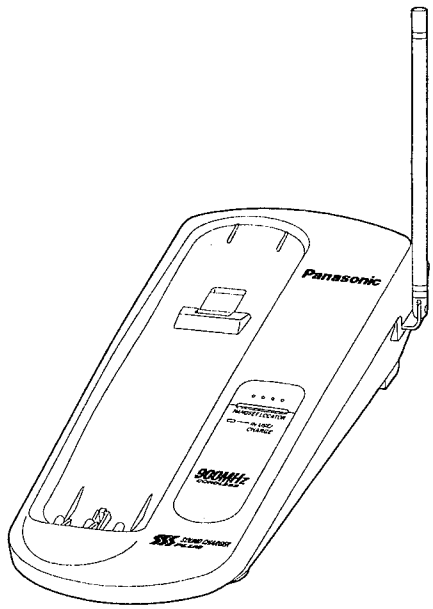
**Black Version** **White Version**

(for Canada)

Please use this manual together with the Service Manual for model KX-TC1400B/KX-TC1400W order No.KM49903399C1. This Service Manual indicates the main differences between: Original KX-TC1400B/KX-TC1400W and KX-TC1405CB/ KX-TC1405CW.




(Handset)




(Base Unit)

**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians.
Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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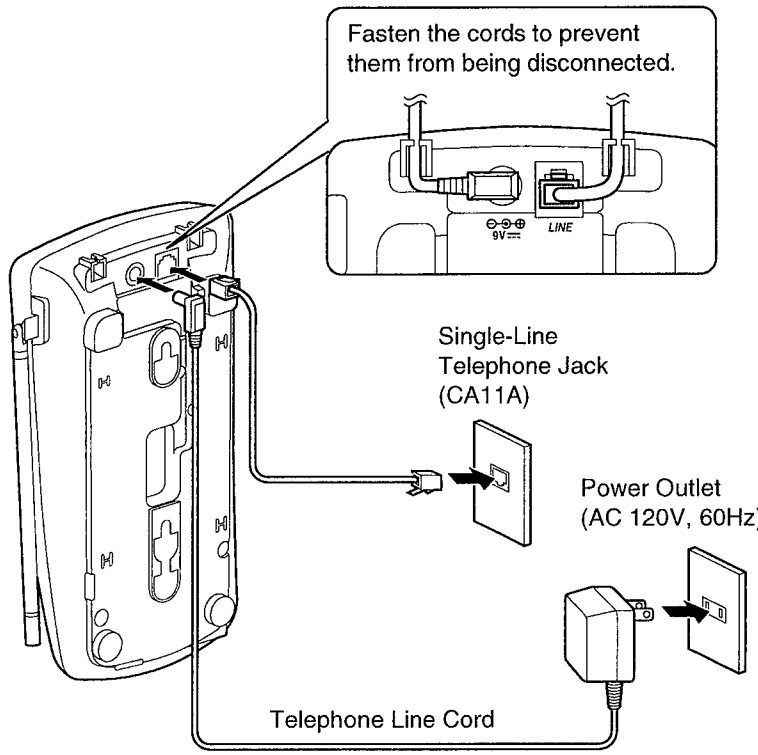
## KX-TC1405CB/KX-TC1405W

### ■ PARTS COMPARISON TABLE (Change from original pages 42~45)

| Ref. No. | Part No. | | Part Name & Description | Pcs/ Set | Remarks |
|---|---|---|---|---|---|
| | KX-TC1400B/ KX-TC1400W | **KX-TC1405CB/ KX-TC1405CW** | | | |
| **Base Unit** | | | | | |
| 1 | PQKM10362Z1 | **PQKM10362P1** | Upper Cabinet (for KX-TC1405CB) | 1 | |
| 1 | PQKM10362Z2 | **PQKM10362P2** | Upper Cabinet (for KX-TC1405CW) | 1 | |
| 2 | PQKF10273R1 | **PQYF10144W1** | Lower Cabinet (for KX-TC1405CB) | 1 | |
| 2 | PQKF10273R2 | **PQYF10144W2** | Lower Cabinet (for KX-TC1405CW) | 1 | |
| 7 | PQGT13560Z | ------- | Name Plate (for KX-TC1405CB) | 0 | Deletion |
| 7 | PQGT13562Z | ------- | Name Plate (for KX-TC1405CW) | 0 | Deletion |
| 10 | ------- | **PQQT11797Z** | Charge Label | 1 | Addition |
| PCB1 | PQWPTC1400BH | **PQWPC1405CBH** | P.C. Board Ass'y (RTL) | 1 | |
| Q352 | 2SD1994A | **2SD2136** | Transistor (Si) | 1 | |
| D356 | ------- | **1SS133** | Diode (Si) | 1 | Addition |
| D903 | ------- | **MA110** | Diode (Si) | 1 | Addition |
| R101,R102 | PQ4R10XJ155 | **PQ4R10XJ104** | Resistor, 100kΩ | 2 | |
| R103 | PQ4R10XJ563 | **PQ4R10XJ472** | Resistor, 4.7kΩ | 1 | |
| R354 | ------- | **PQ4R10XJ150** | Resistor, 15Ω | 1 | Addition |
| R355 | ------- | **PQ4R10XJ180** | Resistor, 18Ω | 1 | Addition |
| R358 | PQ4R10XJ221 | **PQ4R10XJ121** | Resistor, 120Ω | 1 | |
| C221 | ------- | **PQ4R10XJ106** | Resistor, 10MΩ | 1 | Addition |
| C101,C102 | PQCUV1H183KB | **PQCUV1H154KR** | Capacitor, 0.015μF | 2 | |
| C103 | PQCUV1H102J | **PQCUV1A684KB** | Capacitor, 0.068μF | 1 | |
| **Handset** | | | | | |
| 101 | PQKM10367Z1 | **PQKM10366H1** | Front Cabinet (for KX-TC1405CB) | 1 | |
| 101 | PQKM10367Z2 | **PQKM10366H2** | Front Cabinet (for KX-TC1405CW) | 1 | |
| 102 | PQKF10278R1 | **PQKF10277Q1** | Cabinet Cover (for KX-TC1405CB) | 1 | |
| 102 | PQKF10278R2 | **PQKF10277Q2** | Cabinet Cover (for KX-TC1405CW) | 1 | |
| 107 | PQSX10092Z | **PQSX10092X** | Keyboard Switch (for KX-TC1405CB) | 1 | |
| 107 | PQSX10092Y | **PQSX10092W** | Keyboard Switch (for KX-TC1405CW) | 1 | |
| 109 | PQGT13561Z | ------- | Name Plate (for KX-TC1405CB) | 0 | Deletion |
| 109 | PQGT13563Z | ------- | Name Plate (for KX-TC1405CW) | 0 | Deletion |
| 111 | PQHG10527Z | **PQHG10527Y** | Spacer | 1 | |
| 113 | PQHS10303Z | **PQHS10383Z** | Insulator | 1 | |
| PCB100 | PQWPTC1400BR | **PQWPC1405CBR** | P.C. Board Ass'y (RTL) | 1 | |
| Q901 | ------- | **PQVTDTC143E** | Transistor (Si) | 1 | Addition |
| LED904~LED907 | ------- | **PQVDSML310MT** | LED | 4 | Addition |
| R909,R912,R917 | ------- | **ERJ3GEYJ331** | Resistor, 330Ω | 3 | Addition |
| C212 | ECUV1H103KBV | ------- | Capacitor, 0.01μF | 0 | Deletion |
| **Accessories and Packing Materials** | | | | | |
| A3 | PQQX12148Y | **PQQX12146Z** | Instruction Book (English) | 1 | |
| A3 | ------- | **PQQX12147Z** | Instruction Book (French) | 1 | Addition |
| A4 | ------- | **PQQT11564Z** | Tel Card Label | 1 | Addition |
| P4 | PQPK12732Z | **PQPK12861Z** | Gift Box (for KX-TC1405CB) | 1 | |
| P4 | PQPK12755Z | **PQPK12862Z** | Gift Box (for KX-TC1405CW) | 1 | |

## ■ CONNECTION TO A TELEPHONE LINE (Change from original page 4)




- USE ONLY WITH Panasonic AC ADAPTOR KX-TCA1-G.
- The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)

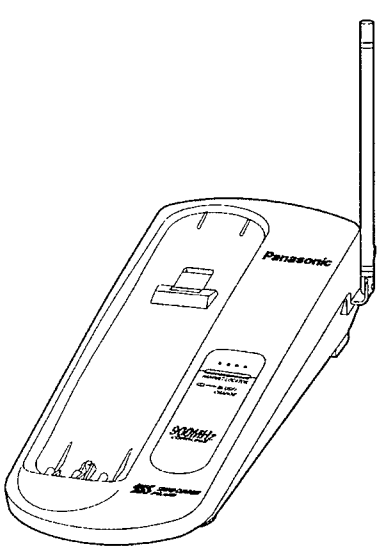
(Model KX-TC1405CB/KX-TC1405CW)

K, (Q),
KXTC1405CB-L4
KXTC1405CW-L4
Printed in Japan

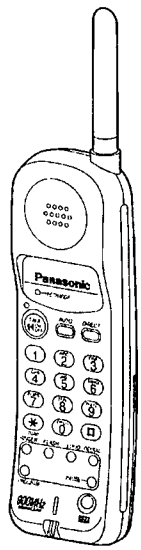
ORDER NO. KM49903399C1
F11

# Service Manual

## Telephone Equipment



(Base Unit)



(Handset)

# KX-TC1400B
# KX-TC1400W

900MHz Cordless Phone

Black Version

White Version

(for U.S.A.)

**SPECIFICATIONS**

| | Base Unit | Handset |
|---|---|---|
| Power Source: | AC Adaptor (KX-TCA1-G) | Rechargeable Ni-Cd battery |
| Receiving Frequency: | 30 channels within 926.1~927.55 MHz | 30 channels within 902.1~903.55 MHz |
| Receiving Method: | Double super heterodyne | Double super heterodyne |
| Transmitting Frequency: | 30 channels within 902.1~903.55 MHz | 30 channels within 926.1~927.55 MHz |
| Oscillation Method: | PLL synthesizer | PLL synthesizer |
| Detecting Method: | Quadrature Discriminator | Quadrature Discriminator |
| Tolerance of OSC Frequency: | ±3.6 kHz | ±3.6 kHz |
| Modulation Method: | F3 (frequency modulation) | F3 (frequency modulation) |
| ID Code: | 20-bit | 20-bit |
| Dial Mode: | | Tone (DTMF)/Pulse |
| Redial: | | Up to 32 digits |
| Speed Dialer: | | Up to 22 digits |
| Power Consumption: | | 21 days at Standby, 8 hours at Talk |
| Dimension (H × W × D): | 2 6/32" × 4 17/32" × 8 15/32" (55 × 115 × 215 mm) | 9 9/16" × 2 8/32" × 1 1/2" (243 × 53 × 38 mm) |
| Weight | 0.57 lbs. (260 g) | 0.49 lbs. (220g) with battery |

Design and specifications are subject to change without notice.

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Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

When you mention the serial number, write down all 11 digits. The serial number may be found on the label affixed to the bottom of the unit.

## FOR SERVICE TECHNICIANS

**ICs and LSIs are vulnerable to static electricity.**
**When replacing, the following precautions will help prevent recurring malfunctions.**
1) Cover the plastic parts boxes with aluminum foil.
2) Ground the soldering irons.
3) Use a conductive mat on the workable.
4) Do not grasp IC or pins with bare fingers.

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# 1 STANDARD BATTERY LIFE

If your Panasonic battery is fully charged;

| | |
|---|---|
| While in use (TALK) | Up to about 8 hours |
| While not in use (Stand-By) | Up to about 21 days |

- Battery life may vary depending on usage conditions and ambient temperature.
- **Clean the handset and base unit charge contacts with a soft dry cloth once a month. Clean more often if the unit is subject to grease, dust or high humidity.** If not, the battery may not charge properly.
- If the battery is fully charged, you do not have to place the handset on the base unit until the RECHARGE indicator flashes. This will maximize the battery life.
- The battery cannot be overcharged.

# 11 HOW TO REPLACE FLAT PACKAGE IC

## 11.1. Preparation

- SOLDER

  Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR-19RMA

- Soldering iron

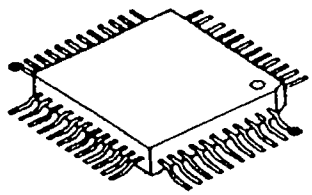
  Recommended power consumption will be between 30 W to 40 W.
  Temperature of Copper Rod 662 ± 50°F (350 ± 10°C)
  (An expert may handle between 60 W to 80 W iron, but beginner might damage foil by overheating.)

- Flux

  HI115 Specific gravity 0.863
  (Original flux will be replaced daily.)

## 11.2. Procedure

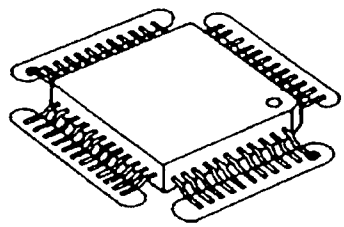
1. Temporary fix FLAT PACKAGE IC by soldering on two marked 2 pins.



●- - - - - -Temporary soldering point.

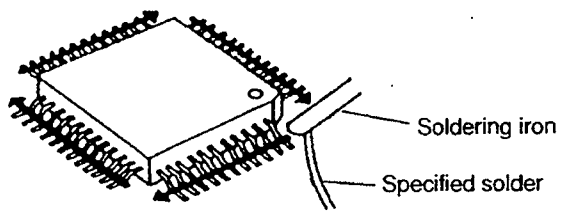
*Most important matter is accurate setting of IC to the corresponding soldering foil.

2. Apply flux for all pins of FLAT PACKAGE IC.



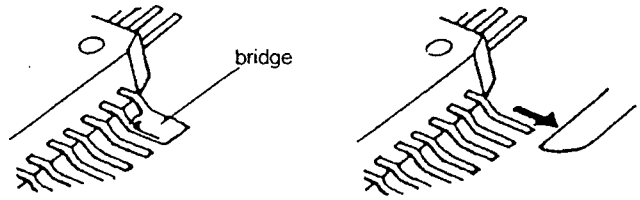
- - - - - - Flux

3. Solder employing specified solder to direction of arrow, as sliding the soldering iron.



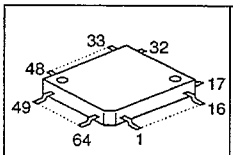
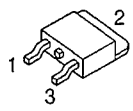
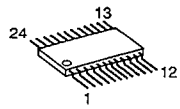
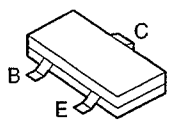
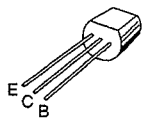
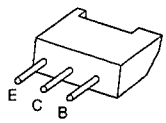
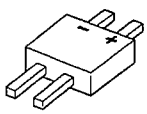
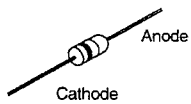
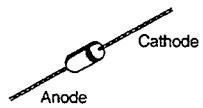
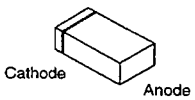
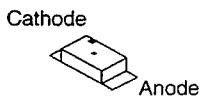

## 11.3. Modification Procedure of Bridge

1. Re-solder slightly on bridged portion.
2. Remove remained solder along pins employing soldering iron as shown in below figure.

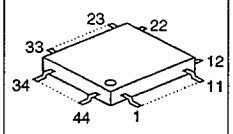
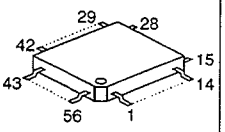
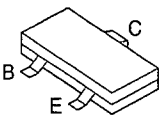
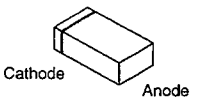
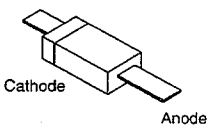
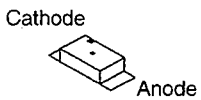


# 12 TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

## 12.1. Base Unit

| | | |
|---|---|---|
|  MN150832BB1 |  PQVIL7806D2T |  AN6137SB |
|  2SC4116, 2SD601R, 2SC2120 |  2SA1625 PQVT2N6517CA |  2SD1991A, 2SD1994A |
|  PQVDS1ZB40F1 |  MA4180, MA4300 |  ISS133 |
|  MA110, MA8220 |  PQVDPY1112H | |

## 12.2. Handset

| | | |
|---|---|---|
|  PQVI9046G014 |  AN6139FA |  2SD1819A, PQVTD123T146 |
|  MA8150, MA111 MA2ZD1400 |  PQVDPTZTE25, MA736 |  PQVDSML310MT, PQVDBR1111C |

# 13 FOR SCHEMATIC DIAGRAM

## 13.1. Base Unit

**Notes:**

1. S201: Handset Locator Switch
2. DC voltage measurements are taken with voltmeter from the negative voltage line.

> Important Safety Notice:
> Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

**This schematic diagram may be modified at any time with the development of new technology.**

## 13.2. Handset

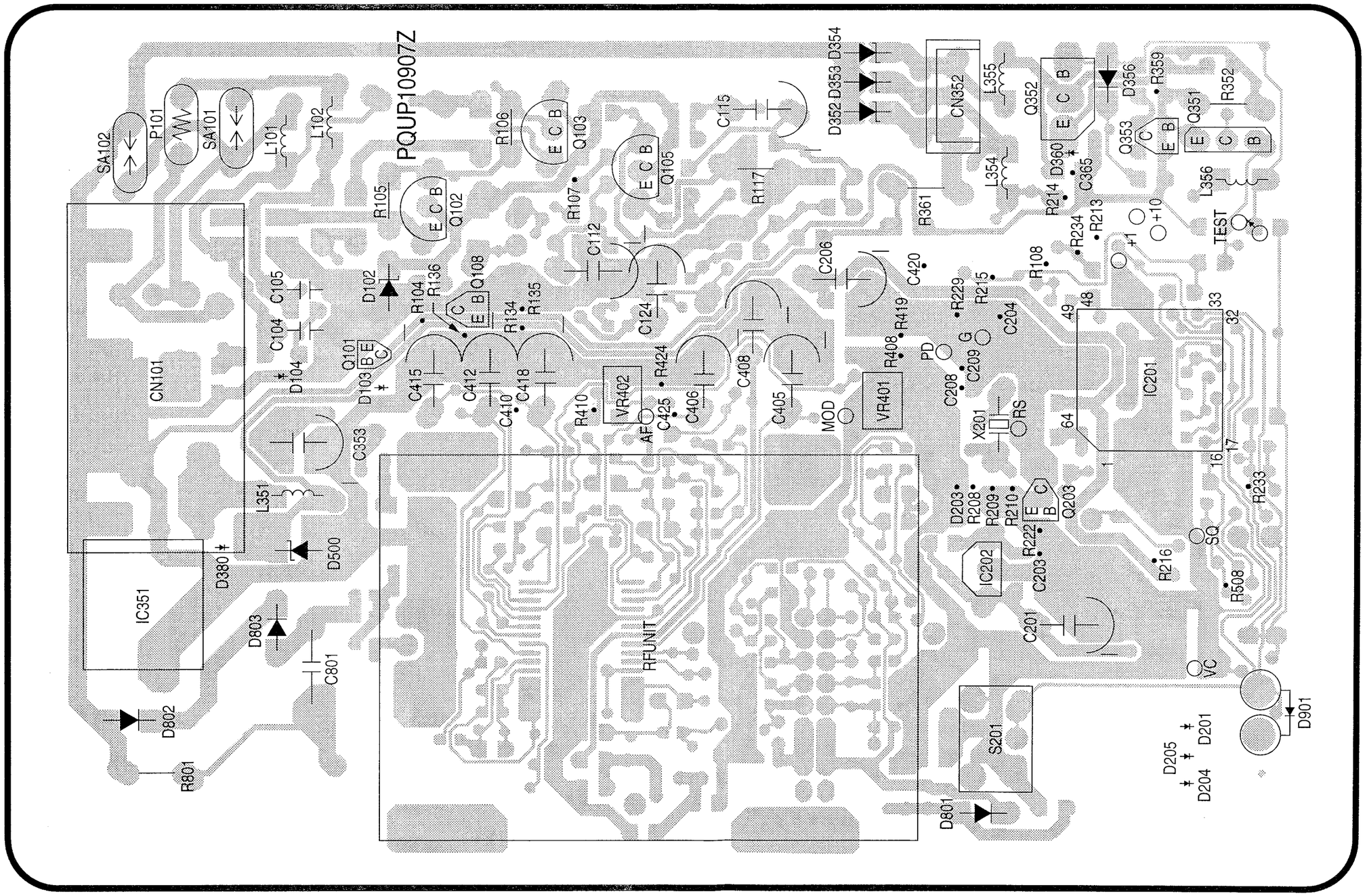
**Notes:**

1. DC voltage measurements are taken with voltmeter from the negative voltage line.

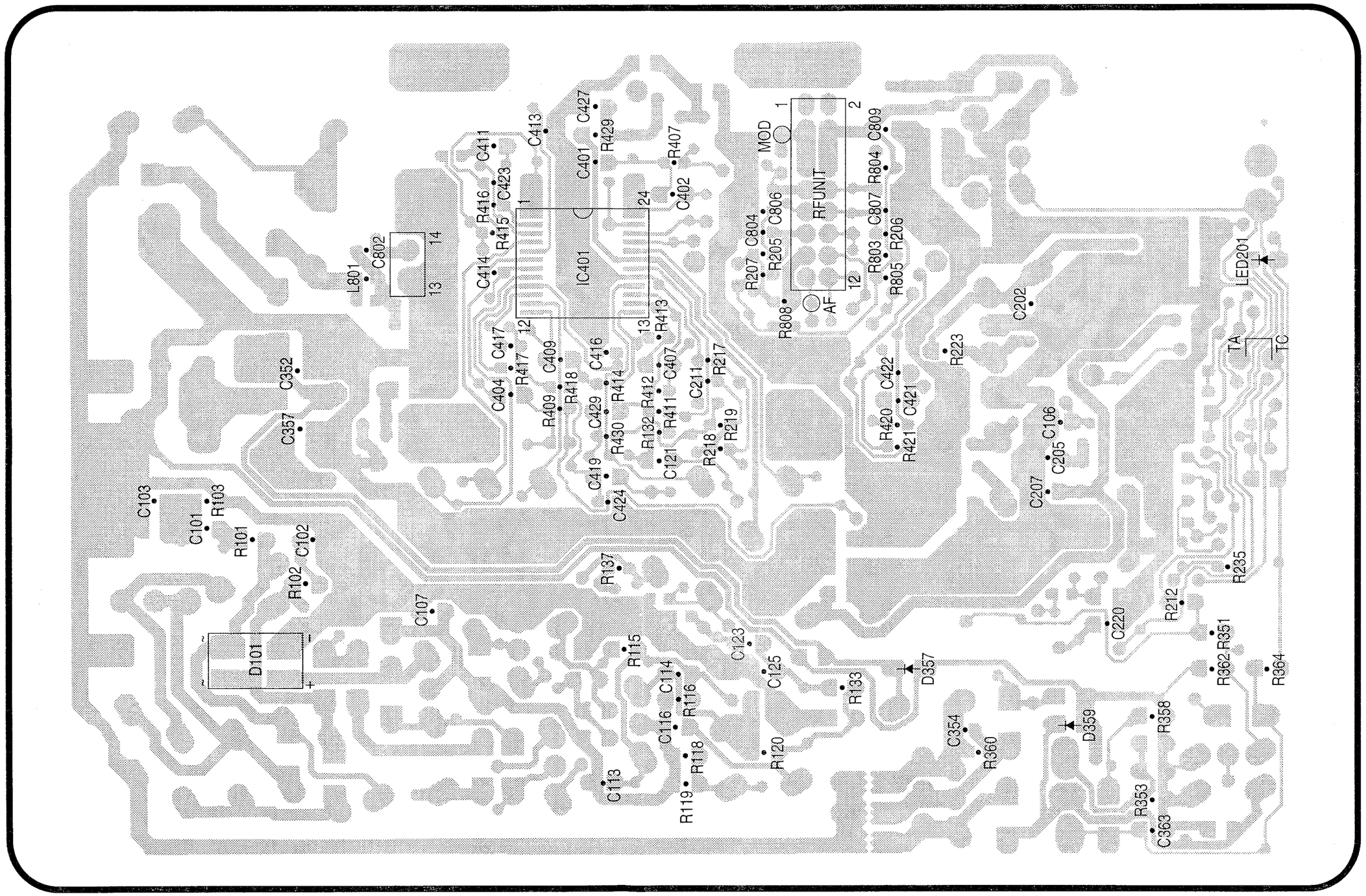
**This schematic diagram may be modified at any time with the development of new technology.**

# 14 CIRCUIT BOARD (Base Unit)

## 14.1. Component View

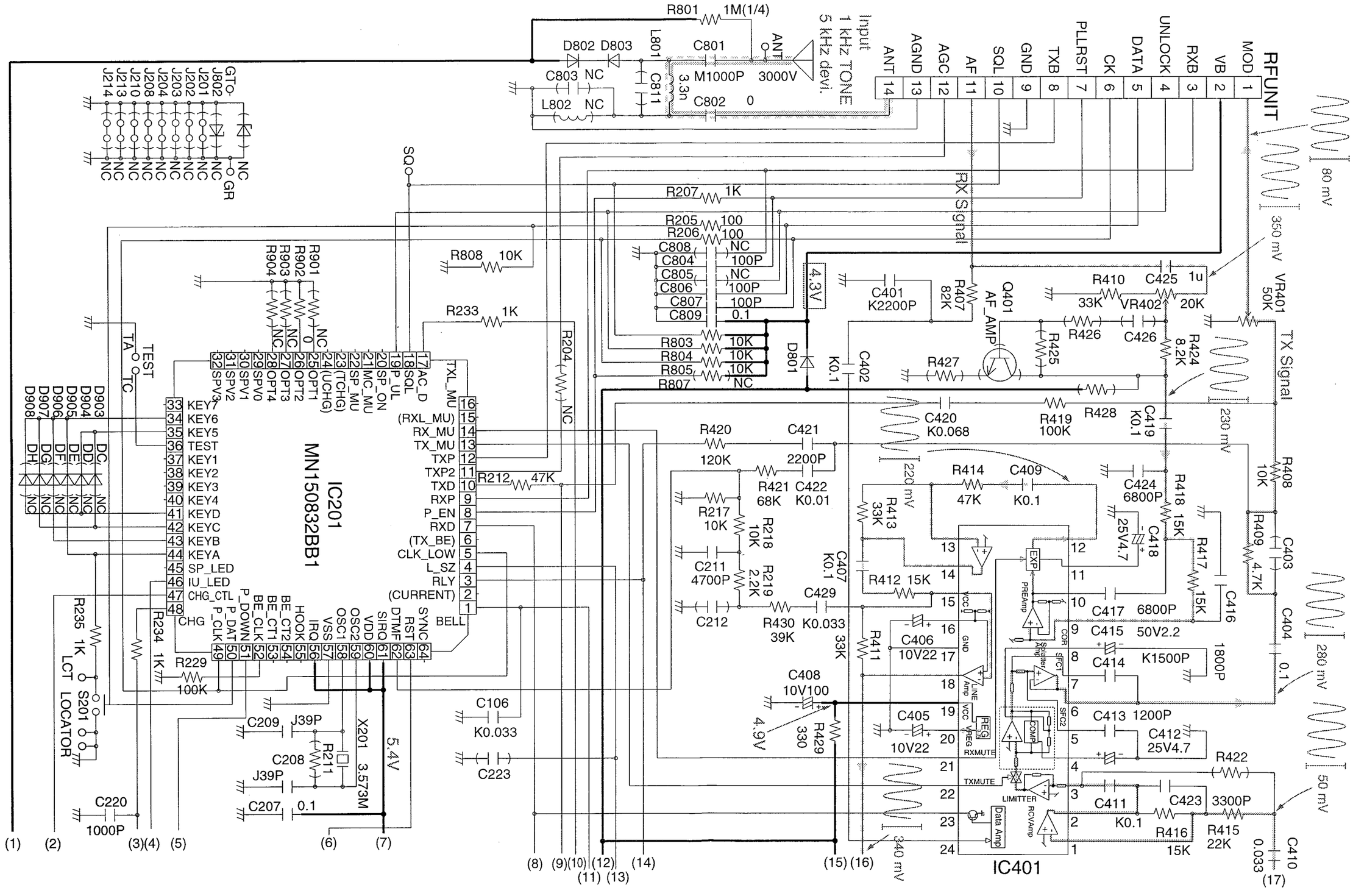


## 14.2. Flow Solder Side View (Base Unit)

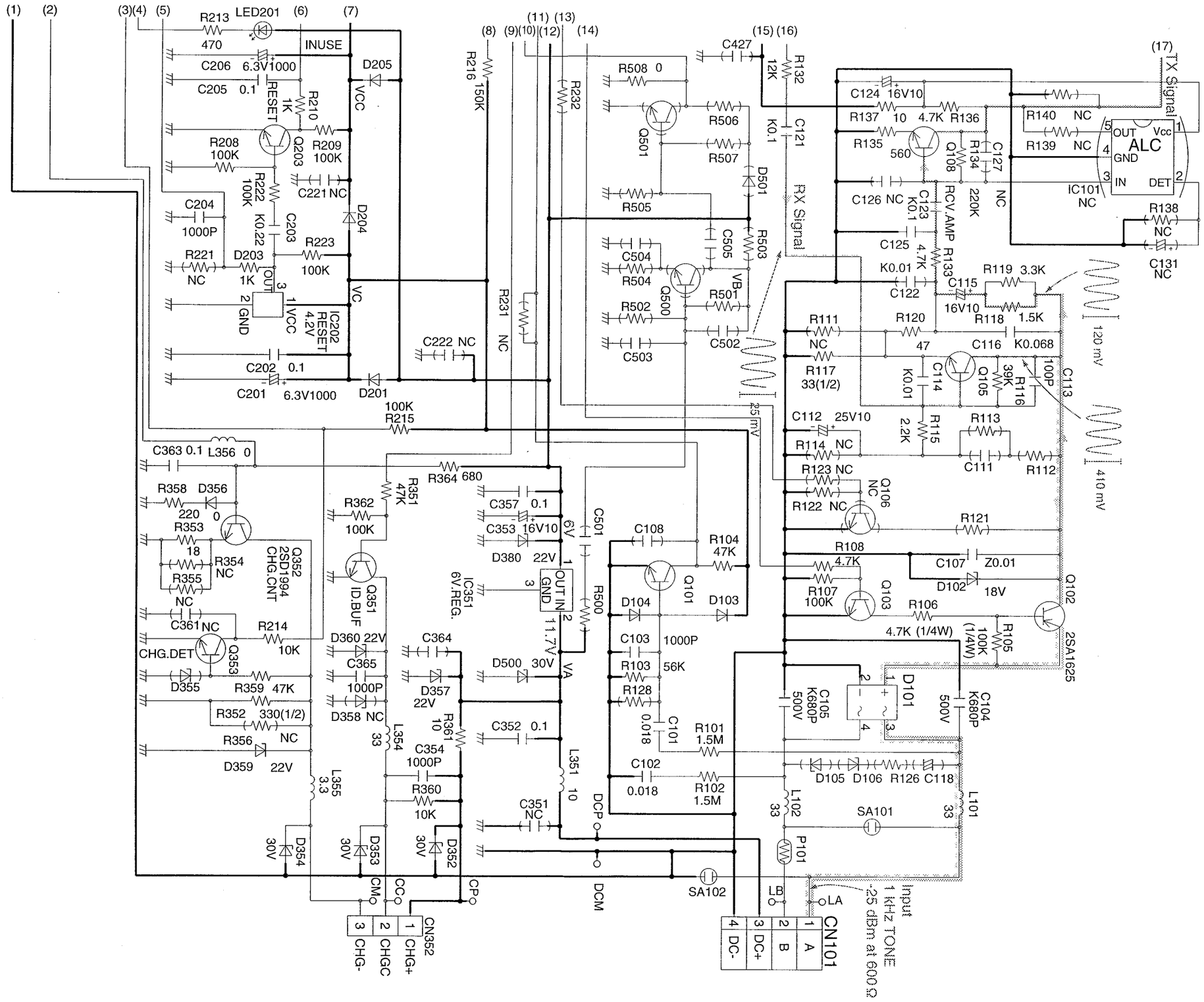


# 15 SCHEMATIC DIAGRAM (Base Unit)

## 15.1. Base Unit No. 1

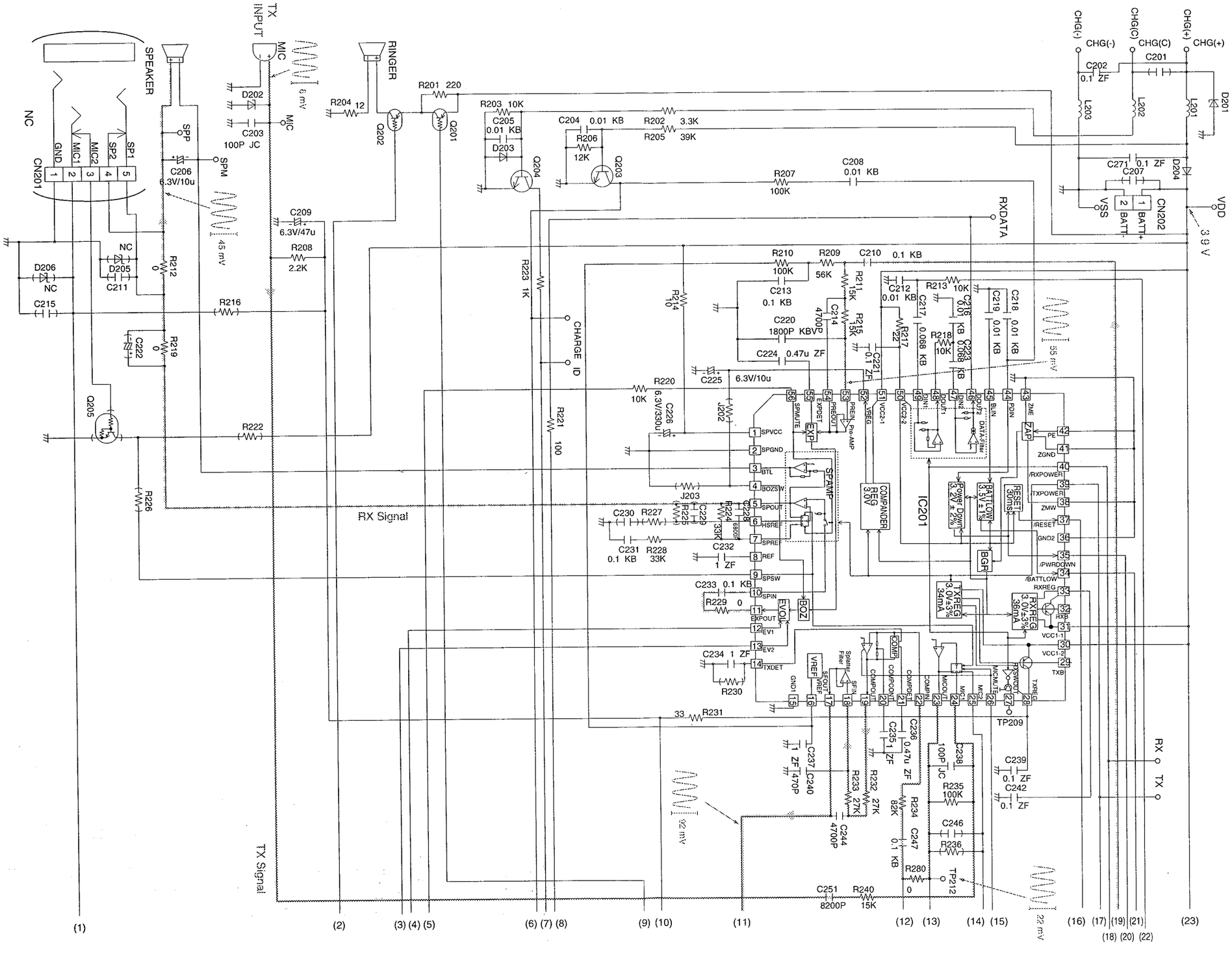


## 15.2. Base Unit No. 2

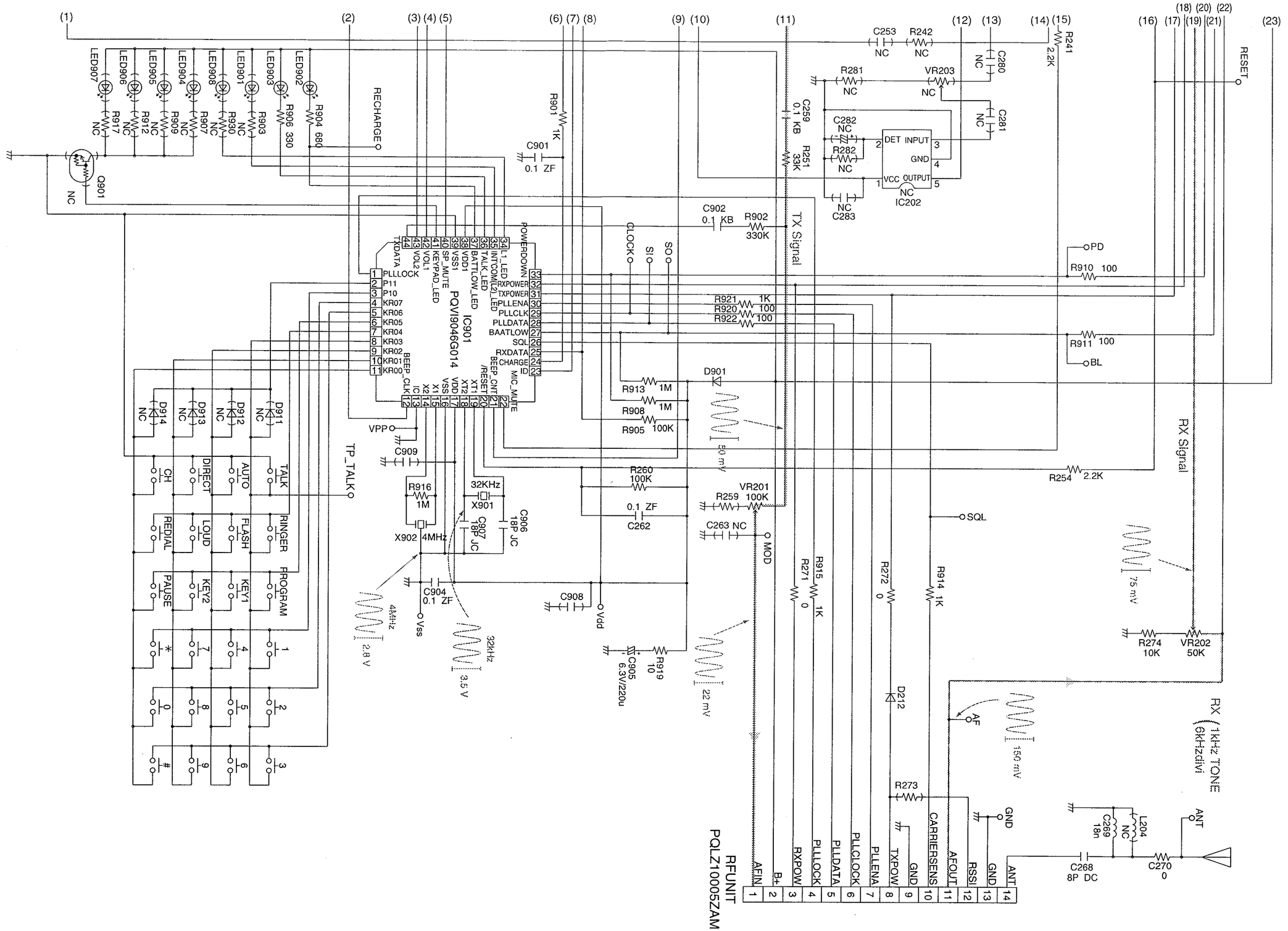


# 16 SCHEMATIC DIAGRAM (Handset)

## 16.1. Handset No. 1

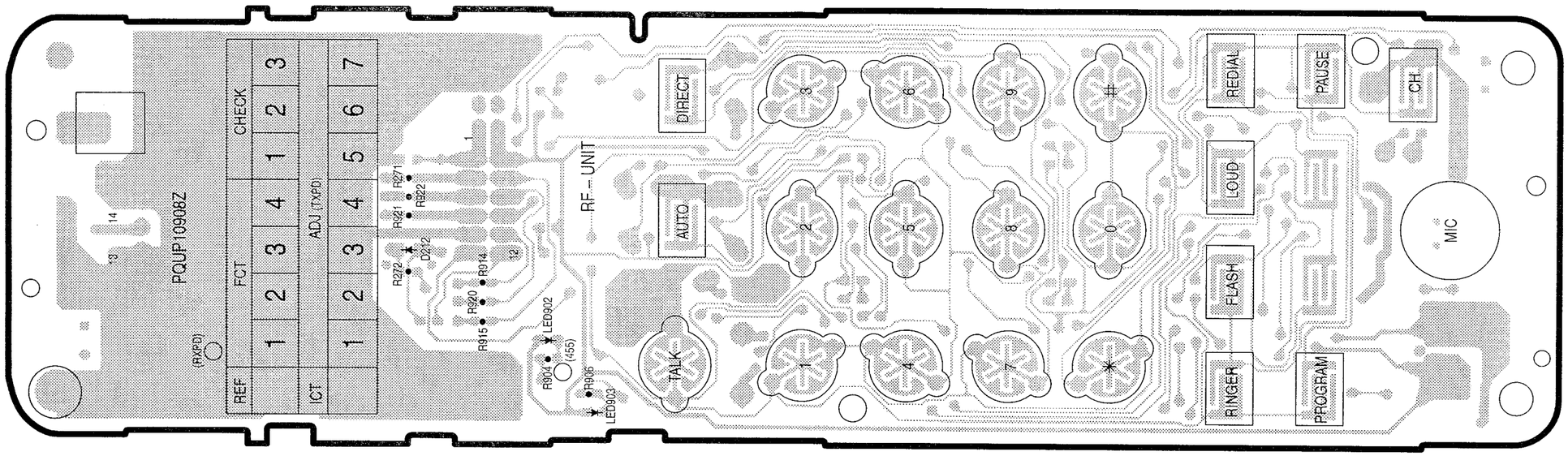


## 16.2. Handset No. 2

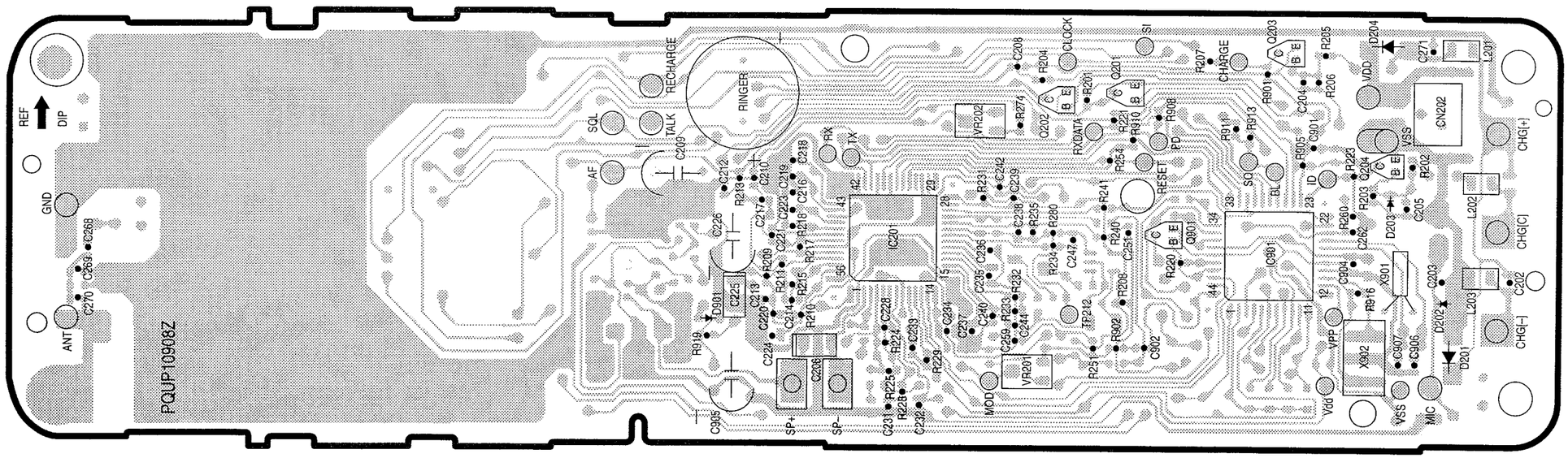


# 17 CIRCUIT BOARD (Handset)

## (Component View)



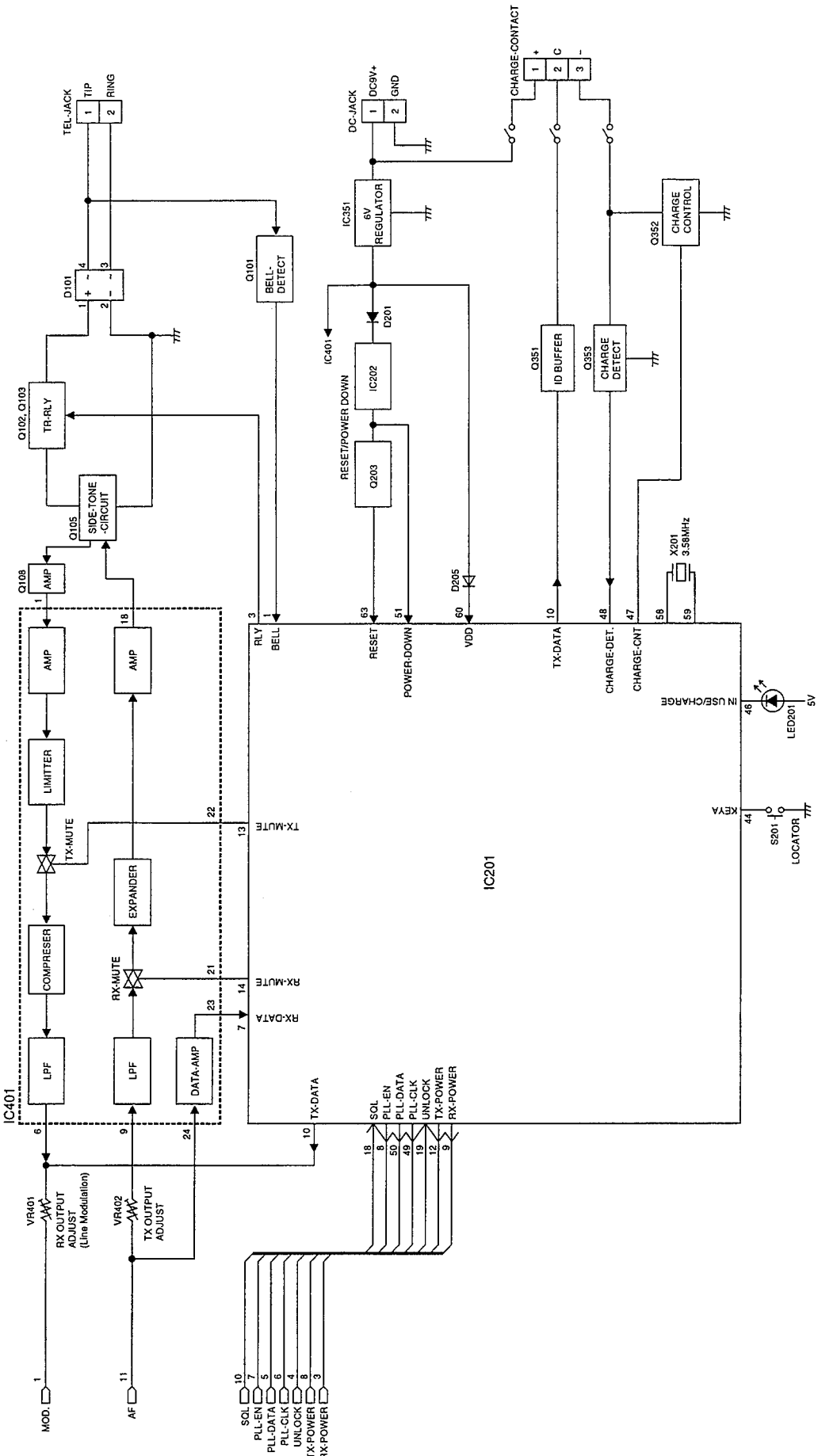

## (Flow Solder Side View)



## 17.1. MEMO

# 18 BLOCK DIAGRAM (Base Unit)

## 18.1. Main P.C. Board

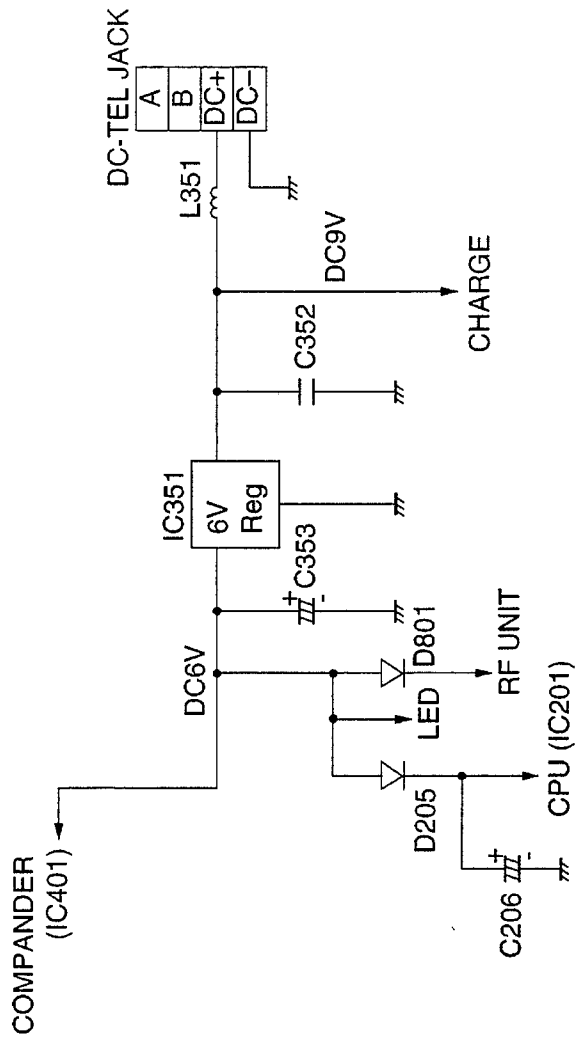


# 19 NEW CIRCUIT OPERATION (Base Unit)

## 19.1. Power Supply Circuit

As indicated in the illustration, the various voltages are supplied constantly to their respective blocks. A time constant is used to compensate for momentary dropouts in the AC power supply.

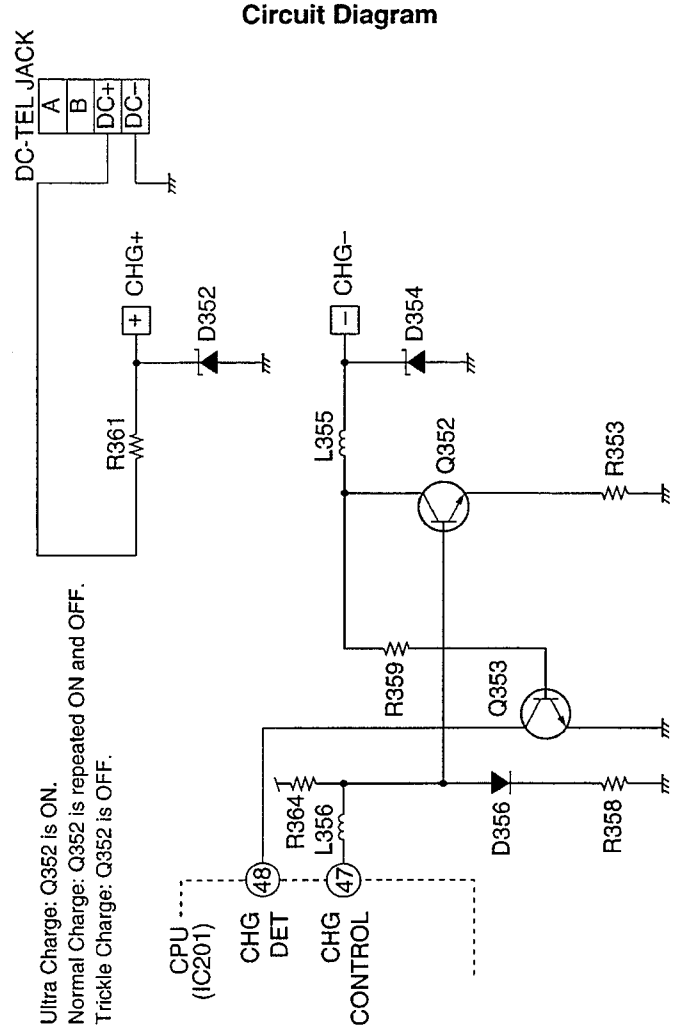
**Circuit Diagram**




## 19.2. Charge Circuit

The voltage from the AC is supplied to the main charge circuits. Normal charge (60mA) is started soon after the Handset is placed on the base unit. After 15 hours the mode changes to trickle charge (18 mA) to prevent overcharging.

**Circuit Diagram**




## 19.3. Bell Detector Circuit

When the CPU detects the Bell signal, pin 46 repeats High/Low fluctuation and then IN USE LED (LED201) in use is flashed.

At this time, if the Handset has been charged, the data from pin 10 is sent through the control terminal and then the Handset's ringer rings.

If the Handset has been not charged, the data signal generated by pins 10 of the CPU is sent to the Handset through RF Unit and then the Handset's ringer rings.

## 19.4. Line Interface

In talk status, the RLY output from pin 3 of IC201 changes to High level, it causes Q103 and Q102 to turn on. A telephone line is seized in result. The loop current flows from D101(+)→Q102, in that order. A pulse signal that repeated switches between high and low level is output from pin 3 of the CPU. This switches the line loop on and off, to generate the dial pulse signal.

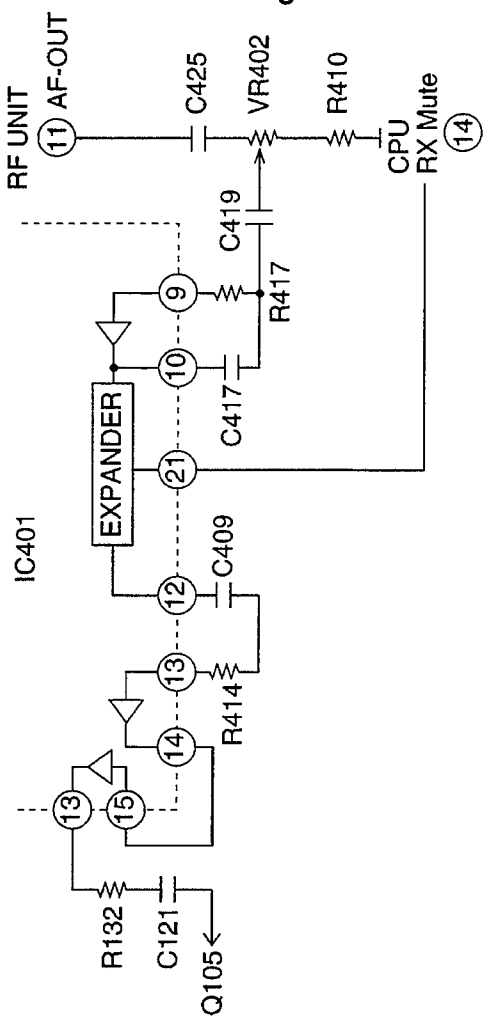
## 19.5. DTMF Signal

When the DTMF data from the Handset is received, the DTMF signal is output from pin 62 of the CPU and sent to the line through R218 → IC401 pin 15 → IC401 pin 18 → Q105.

## 19.6. Line Sending Signal

The AF signal output from the AF terminal of the RF unit is adjusted to the appropriate level by VR402, then it is input to IC401. The RX DATA signal from the Handset is muted at this point by IC401 to prevent the RX DATA from leaking onto the line. In this way the noise is suppressed. IC401 comprises a LPF, a Pre Amp and an expander. The signal compressed by the Handset is expanded in IC401 to recreate a original signal. The output from the expander passes through amplifier Q105 before being input to line.

**Circuit Diagram**

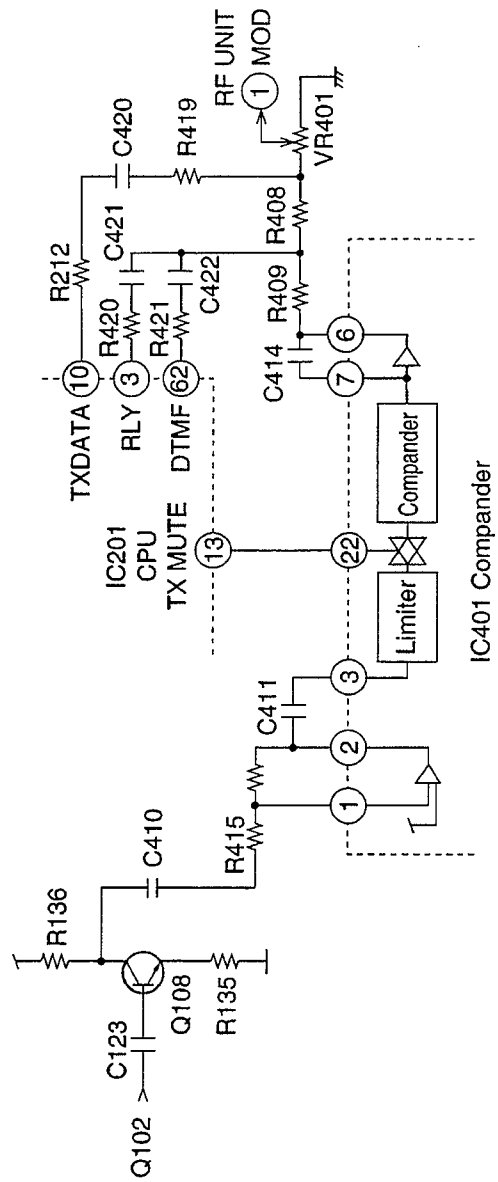



## 19.7. Line Receiving Signal

The audio signal from Q102 is amplified by Q108 and input to IC401. IC401 comprises an amplifier, limiter, mute circuit, compander, and LPF. It performs signal processing. The audio signal output from pin 6 of IC401 is mixed with the DTMF, TX DATA and DIAL signals.

At this point (in the talk mode), the DTMF tones, pulse dial tones, and data transferred between the Handset and base unit is input to the modulator circuit.

**Circuit Diagram**

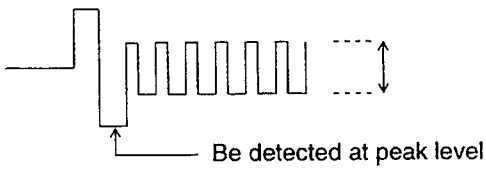


## 19.8. RX Data Circuit

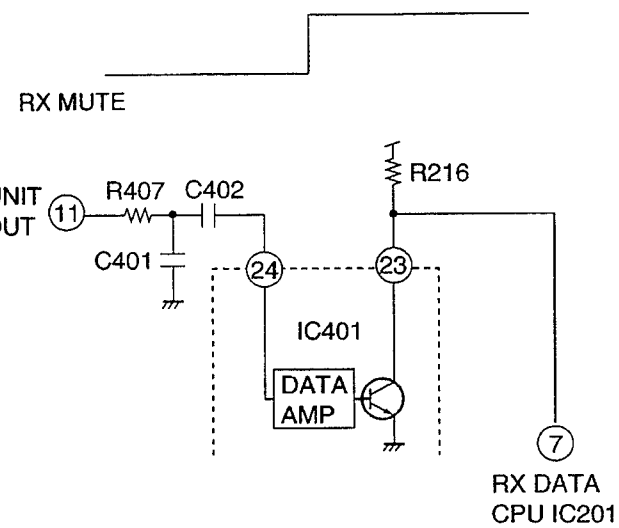
The demodulated data waveform is then input to RX DATA pin 7 of the CPU.

If there is data from the Handset during talk operation, the Handset data is as shown below to prevent the data from leaking onto the line.

**Timing Chart**




**Circuit Diagram**

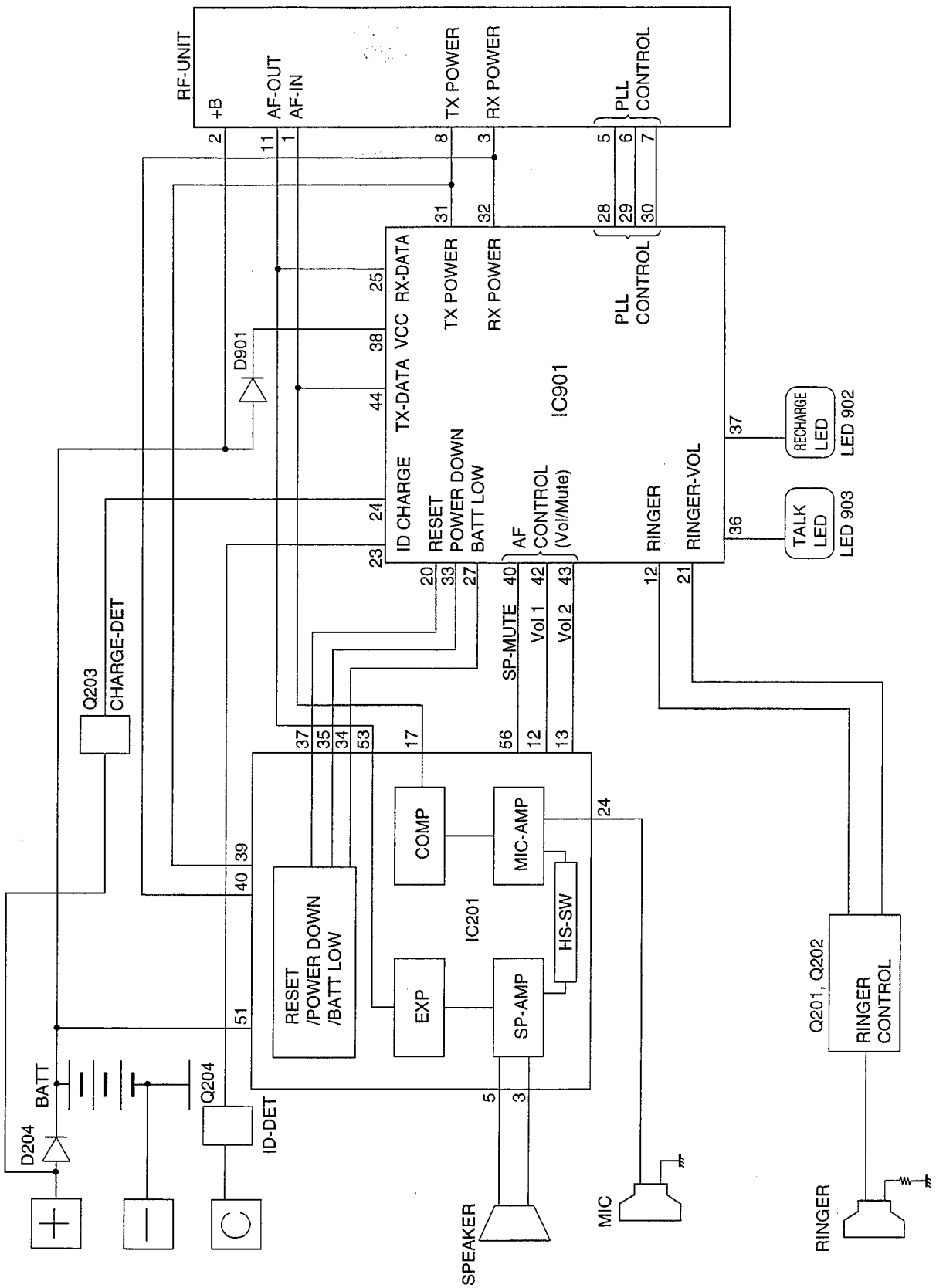



## 19.9. ID Code Setting

When the Handset is placed on the base unit, new ID data is output from pin 10 of the CPU after the charge detector operates. After passing through data amplifier Q351 and the charge terminal, the data is sent to the Handset.

# 20 BLOCK DIAGRAM (Handset)

## 20.1. Control Block

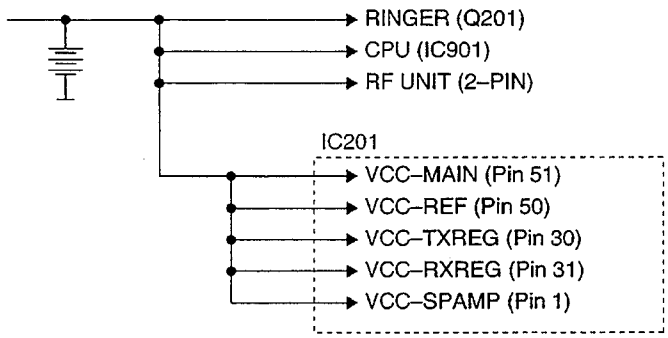


# 21 NEW CIRCUIT OPERATION (Handset)

## 21.1. Power Supply Circuit

Voltage is supplied separately to each block.

**Circuit Diagram**

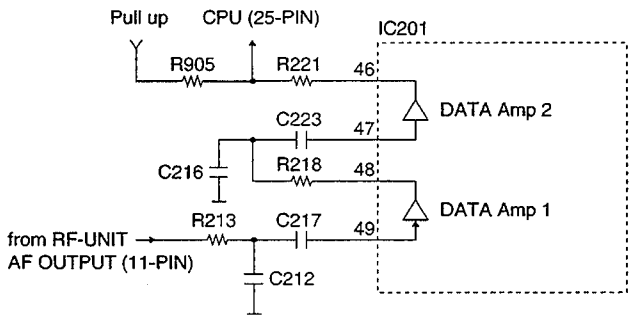



## 21.2. Data Reception Circuit

The wave detection signal from the RF UNIT has high frequency elements eliminated by a CR filter consisting of R213 and C212. Then it is amplified by DATA Amp1 and, once again, high frequency elements are eliminated by R218 and C216. After this, the signal is amplified by DATA Amp2 and input to pin 25 of the CPU.

The data output waveform is a block pulse.

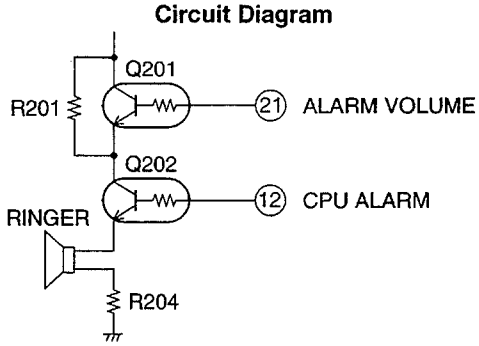
**Circuit Diagram**




## 21.3. Ringer Circuit

If the ringer volume is set to low and an alarm tone is output from pin 12 of the CPU and input to Q202. Then Q201 is turned off. If the ringer volume is set to high, Q201 turns on and results in a louder beep tone.

**Circuit Diagram**




## 21.4. Reception Signal Circuit

The receiver circuit comprises expander IC201.

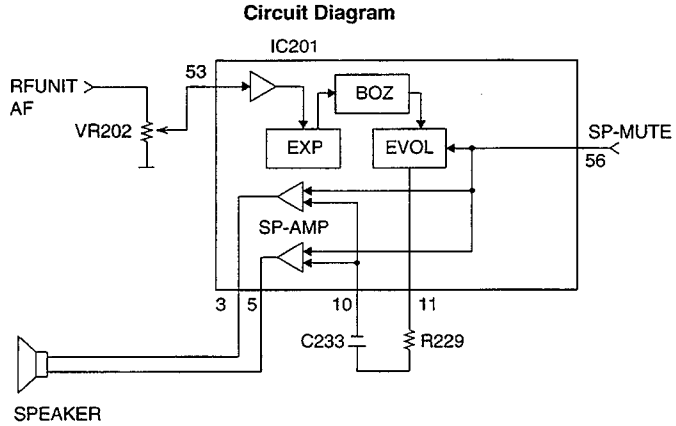
After being adjusted to the appropriate level by VR202, the signal passes through a 3 kHz LPF and an expander built into IC202. If a large input is input to the microphone, the gain control built into lowers the gain to reduce the output of the speaker amplifier. If there is no large input being input to the microphone, the amplifier in IC201 is set to standard gain.

Consequently, the sound of the received audio signal becomes fainter when the user is talking in a loud voice and the side tone level is lowered. When the user talks more softly, the received audio signal is audible at the standard level.

| RX VOL | EV1 IC201 (12) pin | EV2 IC201 (13) pin |
|---|---|---|
| +7dB | H | L |
| 0dB | L | H |
| -7dB | L | L |

SP MUTE H: SPEAKER OFF
L: SPEAKER ON

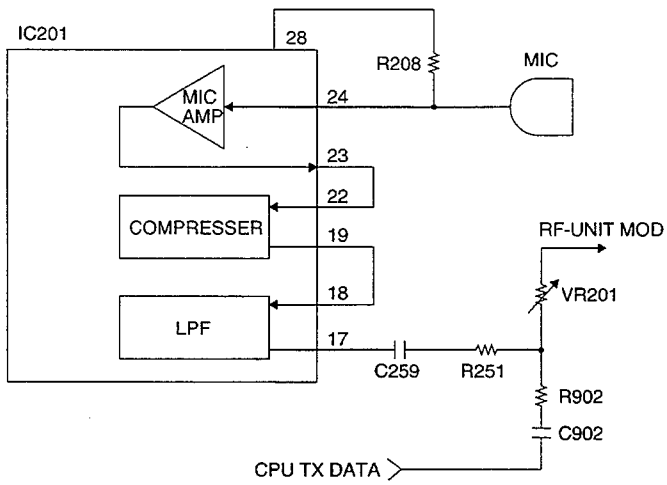
**Circuit Diagram**



## 21.5. Sending Signal

The audio signal from the microphone is amplified by Mic Amp, compander, and 3 kHz LPF built into IC201. It is then mixed with the TX DATA signal from the CPU, the modulation is adjusted by VR201, and input to the modulator in the RF UNIT.

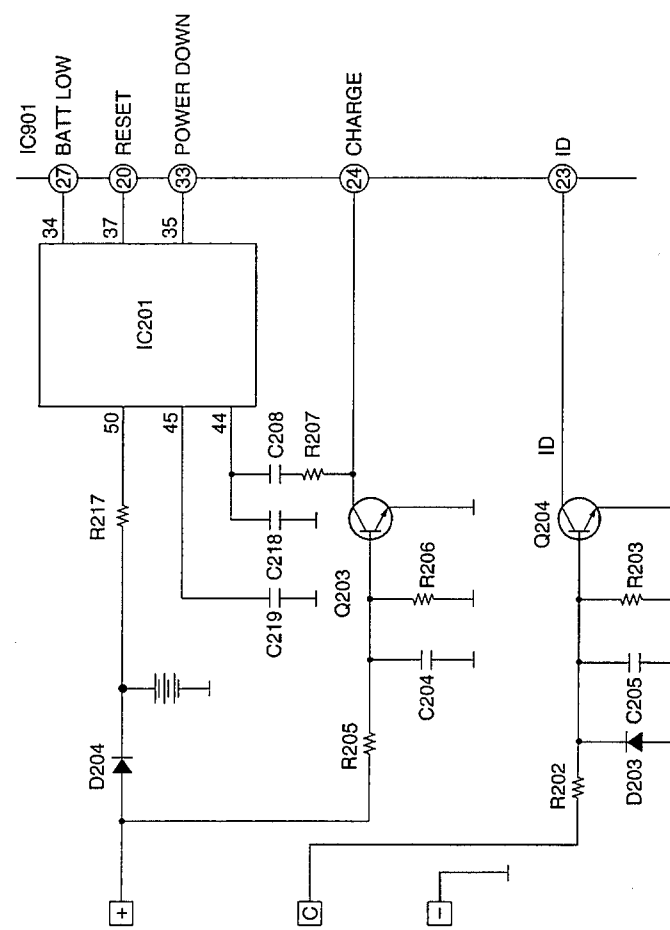
**Circuit Diagram**




## 21.6. Reset/Power Down/Battery Low/ID

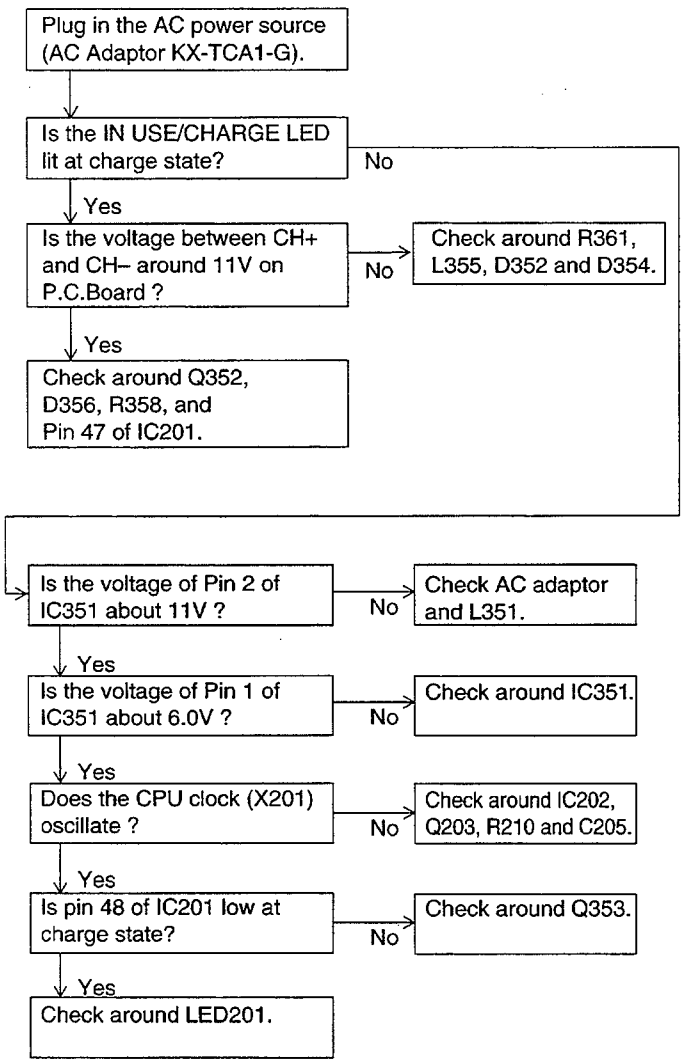
When the battery is installed in the Handset, the reset circuit consisting of R217 and inside IC201 functions, inputting a reset signal to the CPU. This ensures that the unit will operate normally without the user's needing to switch the power off and on. When the voltage from the batteries drops to 3.5 V, 3.5 V voltage detector inside IC201 operates and output a battery low signal to the CPU. This causes the RECHARGE LED to turn on. If voltage continues to drop and reaches 3.2 V, 3.2 V voltage detector inside IC201 operates and outputs a power down signal to the CPU. This causes power to be cut off automatically and prevents the battery from over discharging.
Q203 is a charge detector that informs the CPU whether or not the handset is currently being charged. During charging, ID data is sent from the base unit. Q204 receives this ID data and sends it to the CPU.

**Circuit Diagram**

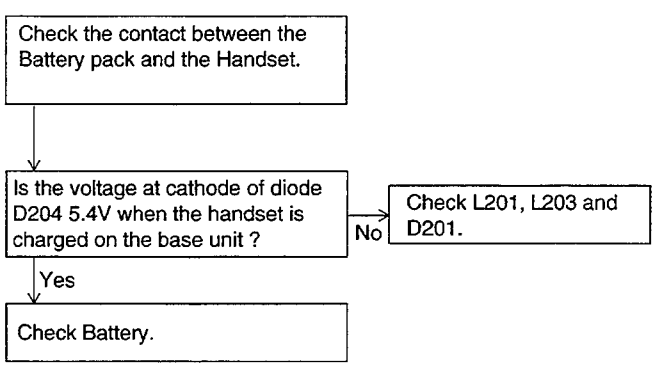


# 22 TROUBLESHOOTING GUIDE

## 22.1. Battery won't Charge (Base Unit)

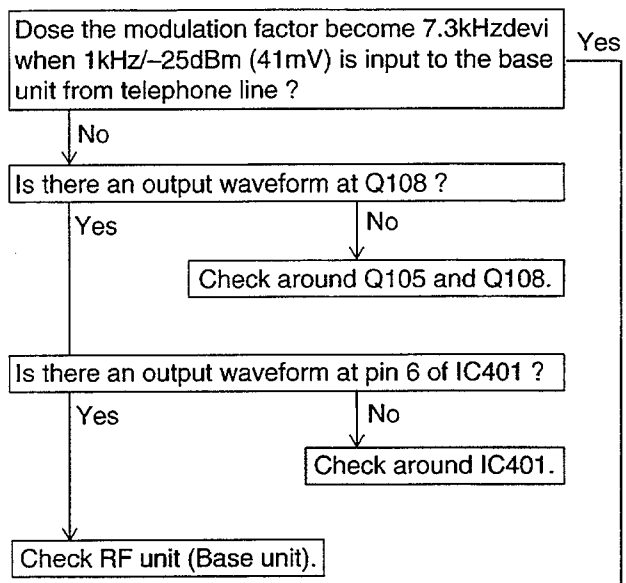

Plug in the AC power source (AC Adaptor KX-TCA1-G).
Is the IN USE/CHARGE LED lit at charge state?
No
Yes
Is the voltage between CH+ and CH– around 11V on P.C.Board ?
No
Check around R361, L355, D352 and D354.
Yes
Check around Q352, D356, R358, and Pin 47 of IC201.
Is the voltage of Pin 2 of IC351 about 11V ?
No
Check AC adaptor and L351.
Yes
Is the voltage of Pin 1 of IC351 about 6.0V ?
No
Check around IC351.
Yes
Does the CPU clock (X201) oscillate ?
No
Check around IC202, Q203, R210 and C205.
Yes
Is pin 48 of IC201 low at charge state?
No
Check around Q353.
Yes
Check around LED201.

## 22.2. Battery won't Charge (Handset)

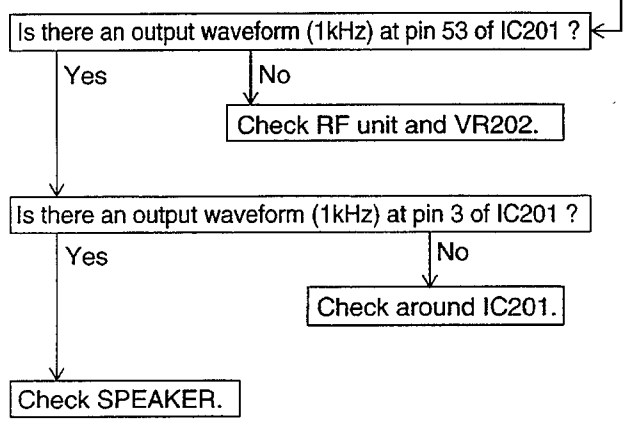

Check the contact between the Battery pack and the Handset.
Is the voltage at cathode of diode D204 5.4V when the handset is charged on the base unit ?
No
Check L201, L203 and D201.
Yes
Check Battery.

## 22.3. No Voice Reception

BASE UNIT


Dose the modulation factor become 7.3kHzdevi when 1kHz/–25dBm (41mV) is input to the base unit from telephone line ?
Yes
No
Is there an output waveform at Q108 ?
Yes
No
Check around Q105 and Q108.
Is there an output waveform at pin 6 of IC401 ?
Yes
No
Check around IC401.
Check RF unit (Base unit).

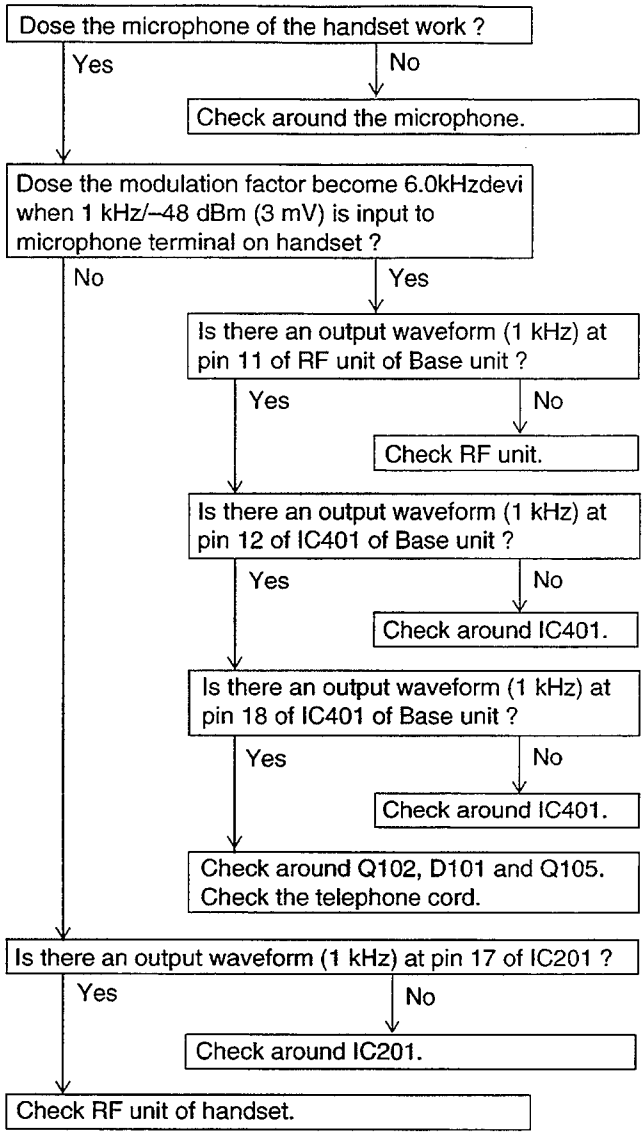
HANDSET


Is there an output waveform (1kHz) at pin 53 of IC201 ?
Yes
No
Check RF unit and VR202.
Is there an output waveform (1kHz) at pin 3 of IC201 ?
Yes
No
Check around IC201.
Check SPEAKER.

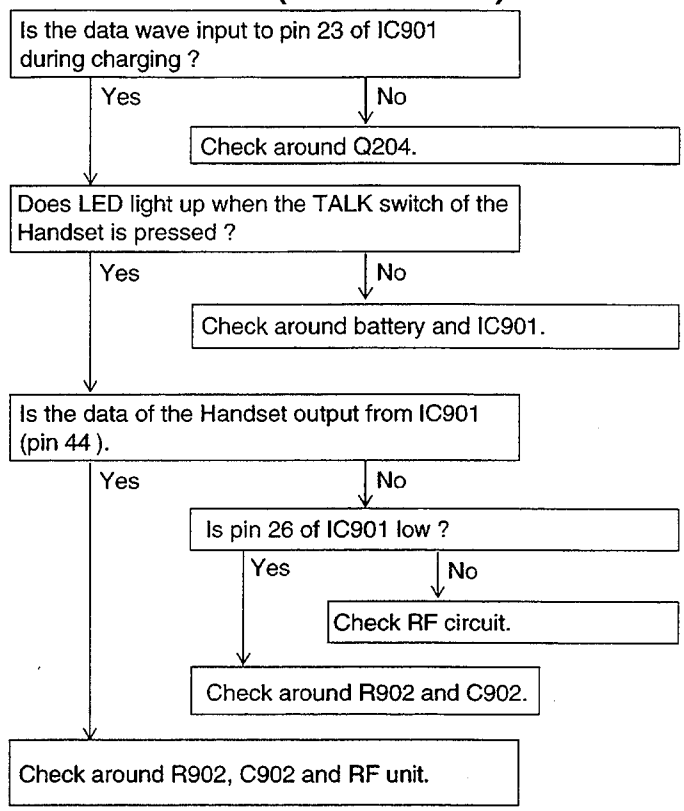
**Note:**

When checking the RF UNIT, refer to **7. HOW TO CHECK THE RF UNIT.**

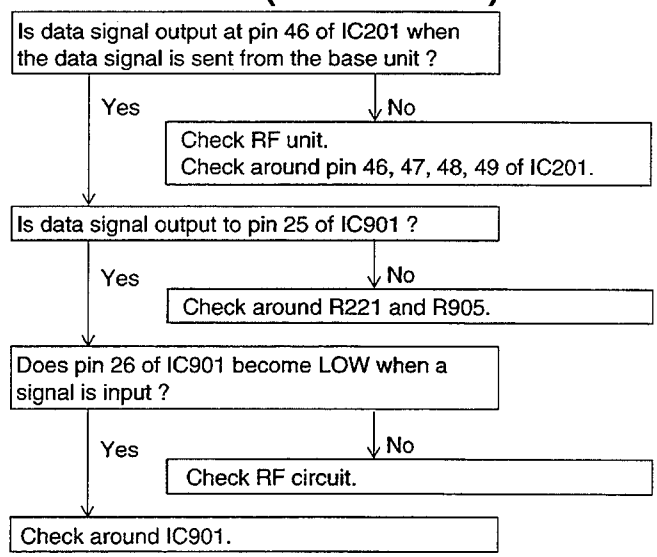
## 22.4. No Voice Transmission


Dose the microphone of the handset work ?
Yes
No
Check around the microphone.
Dose the modulation factor become 6.0kHzdevi when 1 kHz/–48 dBm (3 mV) is input to microphone terminal on handset ?
No
Yes
Is there an output waveform (1 kHz) at pin 11 of RF unit of Base unit ?
Yes
No
Check RF unit.
Is there an output waveform (1 kHz) at pin 12 of IC401 of Base unit ?
Yes
No
Check around IC401.
Is there an output waveform (1 kHz) at pin 18 of IC401 of Base unit ?
Yes
No
Check around IC401.
Check around Q102, D101 and Q105. Check the telephone cord.
Is there an output waveform (1 kHz) at pin 17 of IC201 ?
Yes
No
Check around IC201.
Check RF unit of handset.

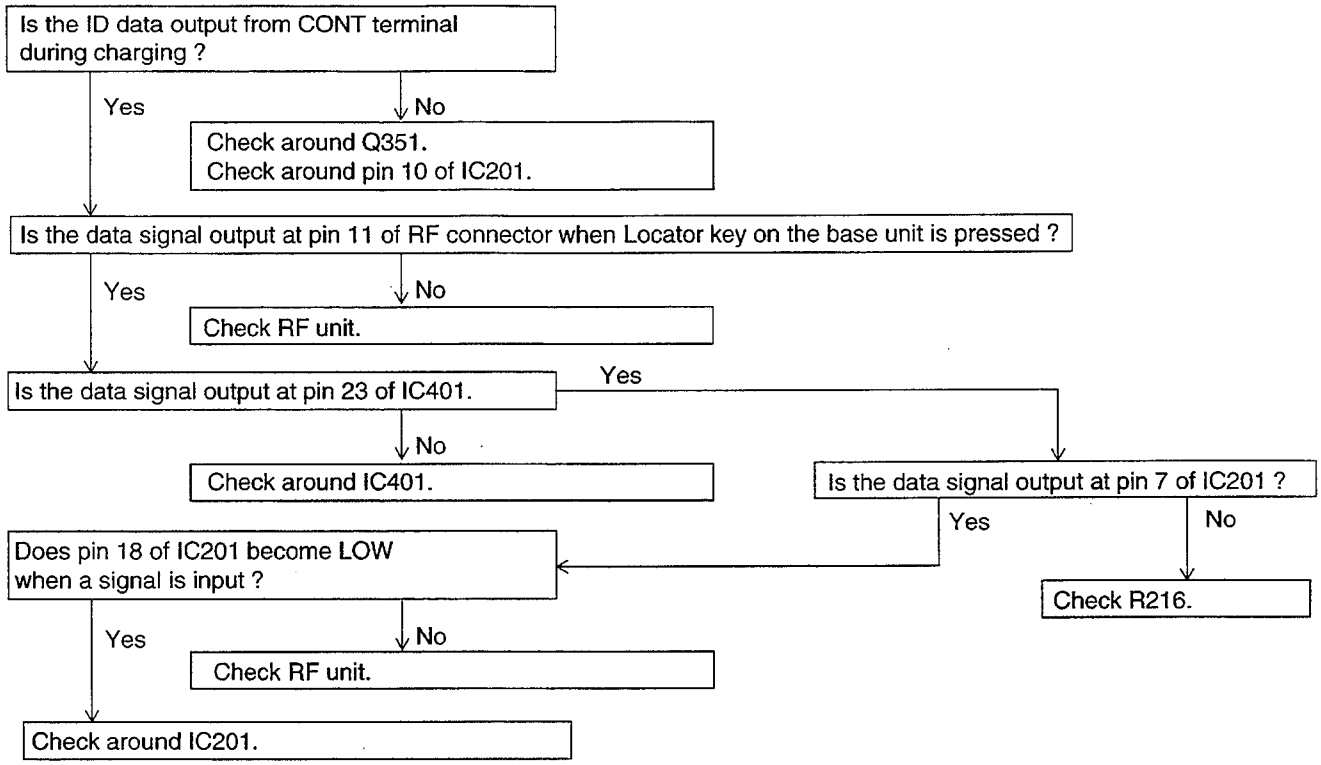
## 22.5. No Link (Handset TX)


Is the data wave input to pin 23 of IC901 during charging ?
Yes
No
Check around Q204.
Does LED light up when the TALK switch of the Handset is pressed ?
Yes
No
Check around battery and IC901.
Is the data of the Handset output from IC901 (pin 44 ).
Yes
No
Is pin 26 of IC901 low ?
Yes
No
Check RF circuit.
Check around R902 and C902.
Check around R902, C902 and RF unit.

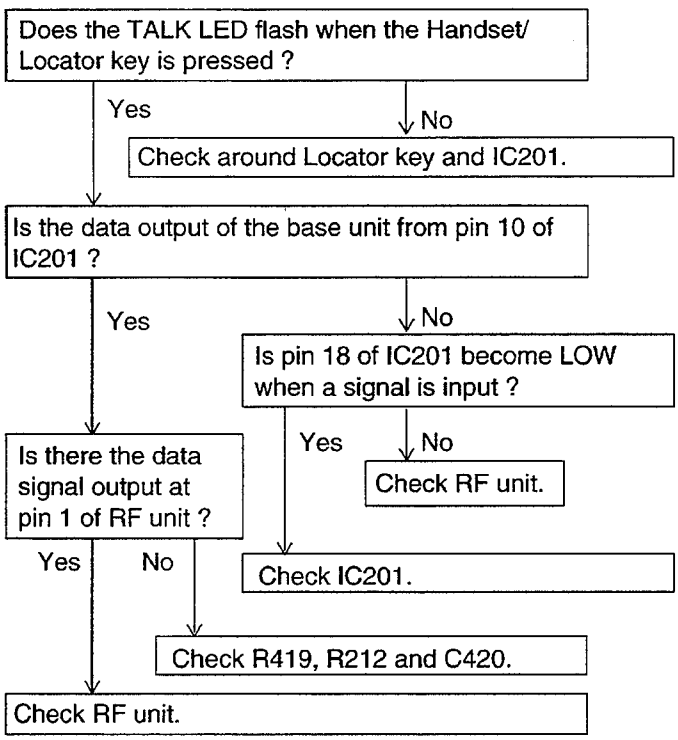
## 22.6. No Link (Handset RX)


Is data signal output at pin 46 of IC201 when the data signal is sent from the base unit ?
Yes
No
Check RF unit.
Check around pin 46, 47, 48, 49 of IC201.
Is data signal output to pin 25 of IC901 ?
Yes
No
Check around R221 and R905.
Does pin 26 of IC901 become LOW when a signal is input ?
Yes
No
Check RF circuit.
Check around IC901.

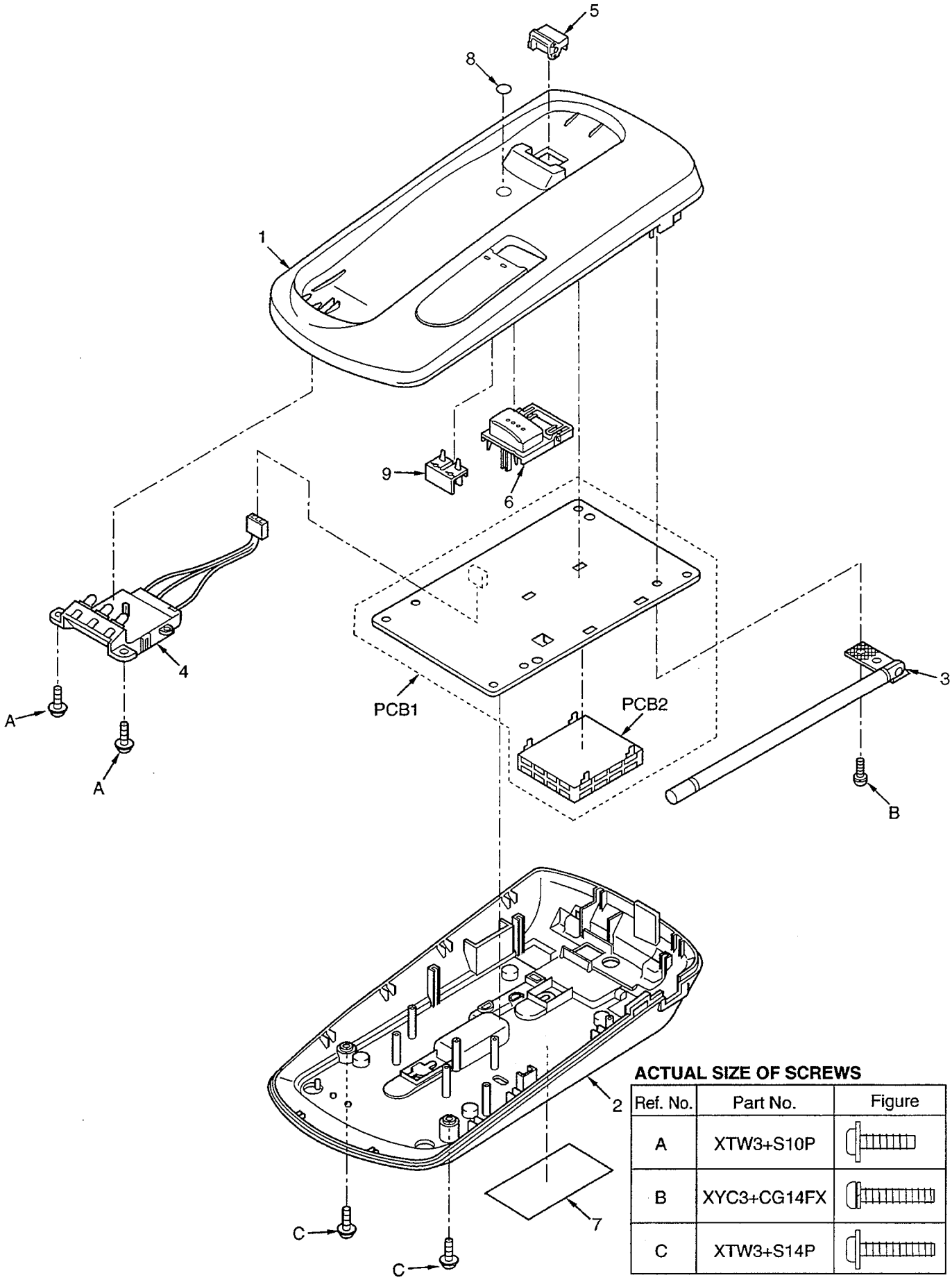
## 22.7. No Link (Base Unit RX)


Is the ID data output from CONT terminal during charging ?
Yes
No
Check around Q351.
Check around pin 10 of IC201.
Is the data signal output at pin 11 of RF connector when Locator key on the base unit is pressed ?
Yes
No
Check RF unit.
Is the data signal output at pin 23 of IC401.
Yes
No
Check around IC401.
Is the data signal output at pin 7 of IC201 ?
Yes
No
Check R216.
Does pin 18 of IC201 become LOW when a signal is input ?
Yes
No
Check RF unit.
Check around IC201.

## 22.8. No Link (Base Unit TX)


Does the TALK LED flash when the Handset/ Locator key is pressed ?
Yes
No
Check around Locator key and IC201.
Is the data output of the base unit from pin 10 of IC201 ?
Yes
No
Is pin 18 of IC201 become LOW when a signal is input ?
Yes
No
Check RF unit.
Is there the data signal output at pin 1 of RF unit ?
Yes
No
Check IC201.
Check R419, R212 and C420.
Check RF unit.

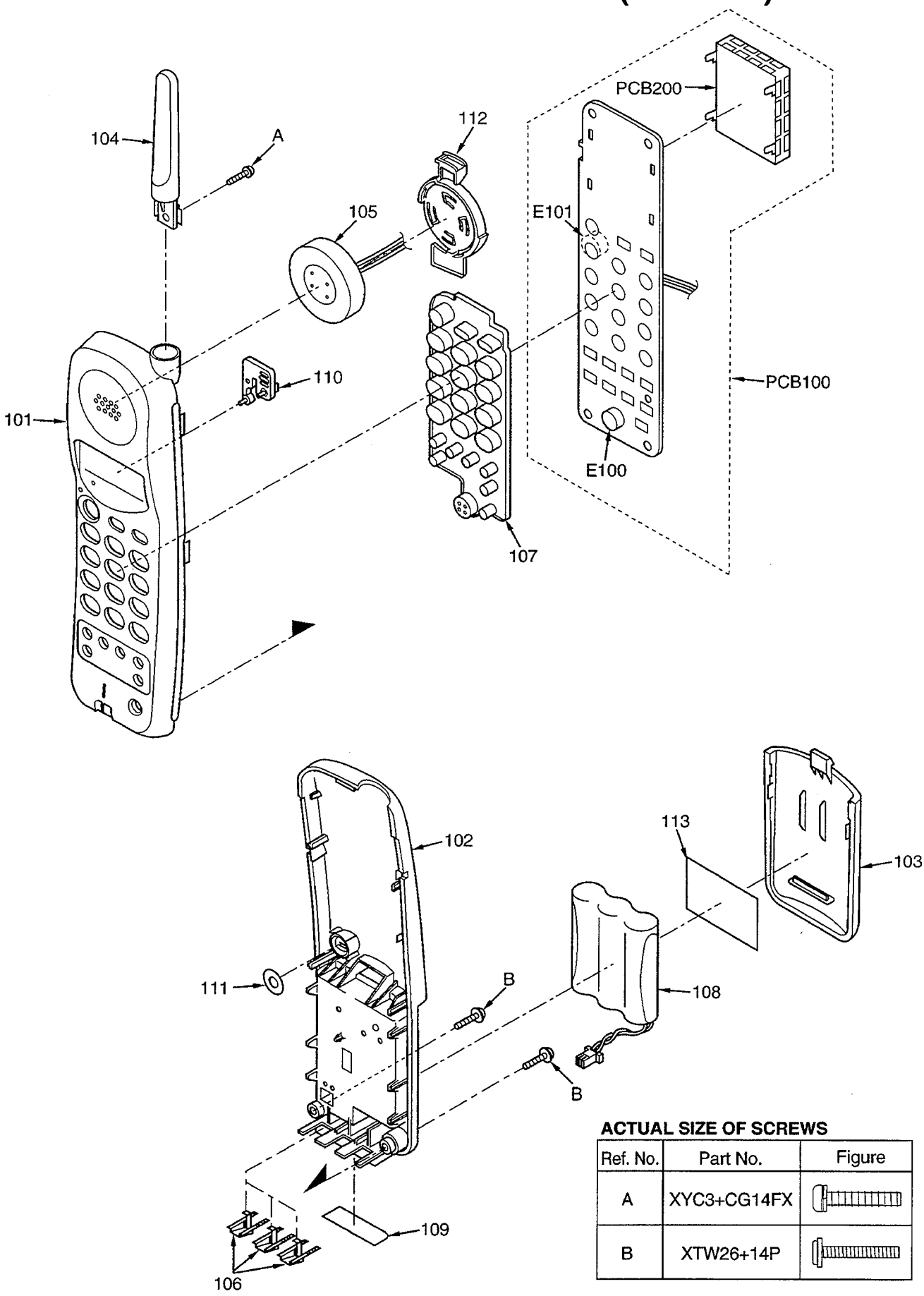
# 23 CABINET AND ELECTRICAL PARTS (Base Unit)




**ACTUAL SIZE OF SCREWS**

| Ref. No. | Part No. | Figure |
|---|---|---|
| A | XTW3+S10P | |
| B | XYC3+CG14FX | |
| C | XTW3+S14P | |

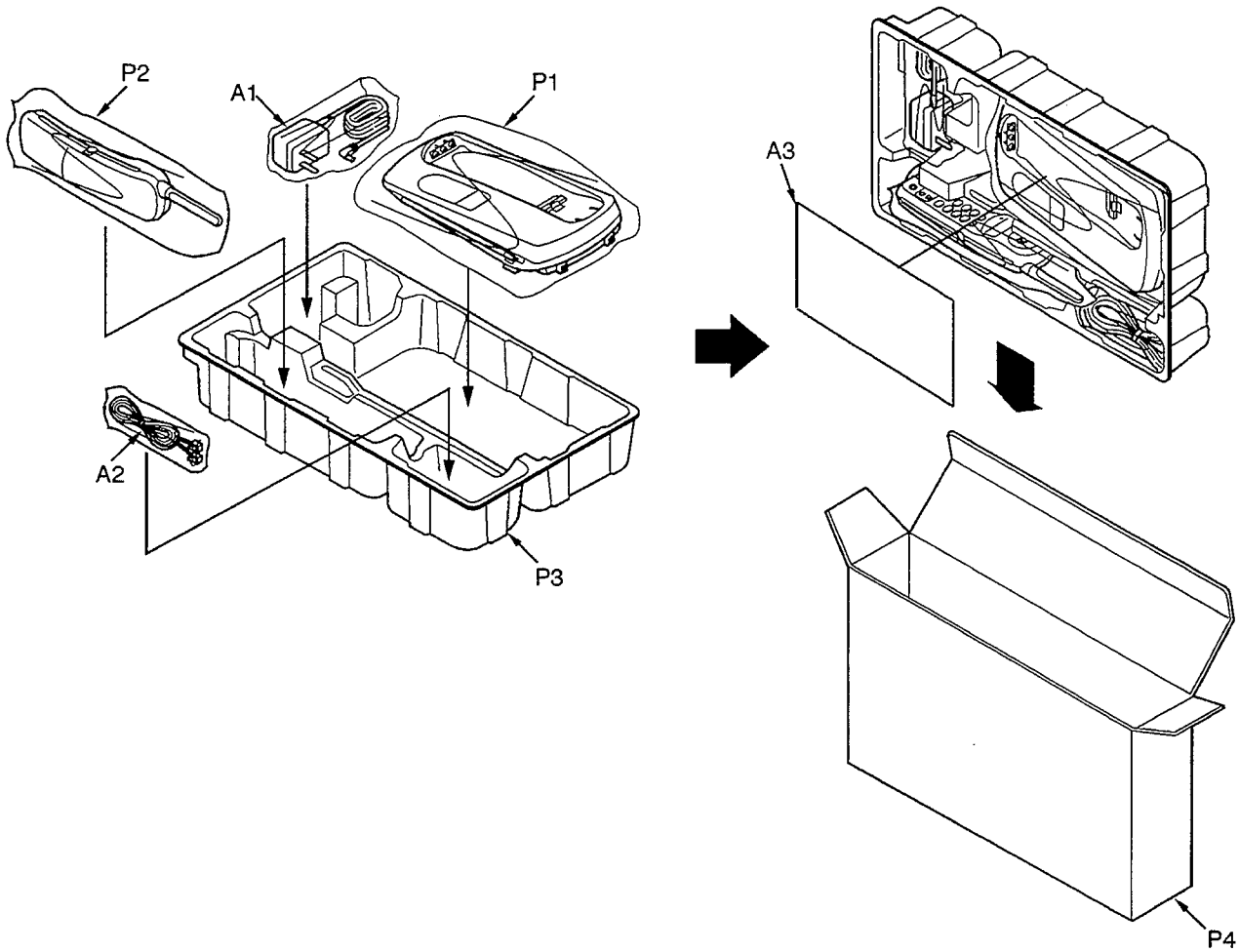
# 24 CABINET AND ELECTRICAL PARTS (Handset)




**ACTUAL SIZE OF SCREWS**

| Ref. No. | Part No. | Figure |
|---|---|---|
| A | XYC3+CG14FX | |
| B | XTW26+14P | |

# 25 ACCESSORIES AND PACKING MATERIALS



# 26 REPLACEMENT PARTS LIST

**This replacement parts list are U.S.A. version only. Refer to the simplified manual (cover) for other areas.**

Note:

1. RTL (Retention Time Limited)

   The marking (RTL) indicates that the Retention Time is limited for this item.

   After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention.

   After the end of this period, the assembly will no longer be available.

2. Important safety notice

   Components identified by a ⚠ mark special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.

3. The S mark indicates service standard parts and may differ from production parts.

4. RESISTORS & CAPACITORS

   Unless otherwise specified;

   All resistors are in ohms (Ω) K=1000Ω, M=1000kΩ

   All capacitors are in MICRO FARADS (μF) P=μμF

   *Type & Wattage of Resistor

Type

| | | |
|---|---|---|
| ERC:Solid<br>ERD:Carbon<br>PQRD:Carbon | ERX:Metal Film<br>ERG:Metal Oxide<br>ER0:Metal Film | PQ4R:Carbon<br>ERS:Fusible Resistor<br>ERF:Cement Resistor |

Wattege

| | | | | | |
|---|---|---|---|---|---|
| 10,16:1/8W | 14,25:1/4W | 12:1/2W | 1:1W | 2:2W | 3:3W |

*Type & Voltage of Capacitor

Type

| | |
|---|---|
| ECFD:Semi-Conductor<br>ECQS:Styrol<br>PQCUV:Chip<br>ECQMS:Mica | ECCD,ECKD,ECBT,PQCBC:Ceramic<br>ECQE,ECQV,ECQG:Polyester<br>ECEA,ECSZ:Electlytic<br>ECQP:Polypropylene |

Voltage

| ECQ Type | ECQG<br>ECQV Type | ECSZ Type | Others | |
|---|---|---|---|---|
| 1H:50V<br>2A:100V<br>2E:250V<br>2H:500V | 05:50V<br>1:100V<br>2:200V | 0F:3.15V<br>1A:10V<br>1V:35V<br>0J:6.3V | 0J :6.3V<br>1A :10V<br>1C :16V<br>1E,25:25V | 1V :35V<br>50,1H:50V<br>1J :63V<br>2A :100V |

## 26.1. Base Unit

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | CABINET AND ELECTRICAL PARTS | |
| | | | |
| 1 | PQKM10362Z1 | UPPER CABINET | |
| | | (FOR KX-TC1400B) | |
| 1 | PQKM10362Z2 | UPPER CABINET | |
| | | (FOR KX-TC1400W) | |
| 2 | PQKF10273R1 | LOWER CABINET | |
| | | (FOR KX-TC1400B) | |
| | | | |
| 2 | PQKF10273R2 | LOWER CABINET | |
| | | (FOR KX-TC1400W) | |
| 3 | PQSA10080Y | ANTENNA (KX-TC1400B) | |
| 3 | PQSA10080Z | ANTENNA (KX-TC1400W) | |
| 4 | PQJT10151Y | CHARGE TERMINAL | |
| 5 | PQKE10082Z1 | HANGER (KX-TC1400B) | S |
| 5 | PQKE10082Z2 | HANGER (KX-TC1400W) | S |
| 6 | PQBC10268Z1 | BUTTON (KX-TC1400B) | S |
| 6 | PQBC10268Z2 | BUTTON (KX-TC1400W) | S |
| 7 | PQGT13560Z | NAME PLATE (KX-TC1400B) | |
| 7 | PQGT13562Z | NAME PLATE (KX-TC1400W) | |
| 8 | PQGX10011Z1 | ORNAMENT (KX-TC1400B) | |
| 8 | PQGX10011Z2 | ORNAMENT (KX-TC1400W) | |
| 9 | PQHR10637Z | SPACER | |
| | | | |
| | | | |
| | | | |
| | | MAIN P.C.BOARD PARTS | |
| | | | |
| PCB1 | PQWPTC1400BH | P.C.BOARD ASS'Y (RTL) | |
| | | | |
| | | | |
| | | ICS | |
| IC201 | MN150832BB1 | IC | |
| IC202 | PQVIPST994CT | IC | |
| IC351 | PQVIL7806D2T | IC | |
| IC401 | AN6137SB | IC | |
| | | | |
| | | | |
| | | TRANSISTORS | |
| Q101 | 2SC4116 | TRANSISTOR(SI) | |
| Q102 | 2SA1625 | TRANSISTOR(SI) | |
| Q103 | PQVT2N6517CA | TRANSISTOR(SI) | |
| Q105 | 2SC2120 | TRANSISTOR(SI) | |
| Q108 | 2SD601R | TRANSISTOR(SI) | |
| Q203 | 2SD601R | TRANSISTOR(SI) | |
| Q351 | 2SD1991A | TRANSISTOR(SI) | |
| Q352 | 2SD1994A | TRANSISTOR(SI) | |
| Q353 | 2SD601R | TRANSISTOR(SI) | |
| | | | |
| | | | |
| | | DIODES | |
| D101 | PQVDS1ZB40F1 | DIODE(SI) | S |
| D102 | MA4180 | DIODE(SI) | |
| D103 | MA110 | DIODE(SI) | |
| D104 | MA110 | DIODE(SI) | |
| D201 | MA110 | DIODE(SI) | |
| D204 | MA110 | DIODE(SI) | |
| D205 | MA110 | DIODE(SI) | |
| D352 | MA4300 | DIODE(SI) | |
| D353 | MA4300 | DIODE(SI) | |
| D354 | MA4300 | DIODE(SI) | |
| D357 | MA8220 | DIODE(SI) | |
| D359 | MA8220 | DIODE(SI) | |
| D360 | MA8220 | DIODE(SI) | |
| D380 | MA8220 | DIODE(SI) | |
| D500 | MA4300 | DIODE(SI) | |
| D801 | 1SS133 | DIODE(SI) | |
| D802 | 1SS133 | DIODE(SI) | |
| D803 | 1SS133 | DIODE(SI) | |
| LED201 | PQVDPY1112H | LED | |
| | | | |
| | | | |
| | | COILS | |
| L101 | PQLQXF330K | COIL | |
| L102 | PQLQXF330K | COIL | |
| L351 | PQLQXF100K | COIL | |
| L354 | PQLQZM330K | COIL | |
| L355 | PQLQZM3R3K | COIL | |
| L801 | PQLQR2M3N3K | COIL | |
| | | | |
| | | | |
| | | | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | SURGE ABSORBERS | |
| SA101 | PQVDDSS301L | SURGE ABSORBER | |
| SA102 | PQVDDSS301L | SURGE ABSORBER | |
| | | | |
| | | | |
| | | VARIABLE RESISTORS | |
| VR401 | EVN5ESX50B54 | VARIABLE RESISTOR | |
| VR402 | EVN5ESX50B24 | VARIABLE RESISTOR | |
| | | | |
| | | | |
| | | SWITCH | |
| S201 | EVQPC005K | SWITCH | |
| | | | |
| | | | |
| | | CRYSTAL OSCILLATOR | |
| X201 | PQVBKBR3.58M | CRYSTAL OSCILLATOR | |
| | | | |
| | | | |
| | | POSISTOR | |
| P101 | PQRPAR390N | THERMISTOR | S |
| | | | |
| | | | |
| | | CONNECTOR | |
| CN352 | PQJP03B70Z | CONNECTOR | |
| | | | |
| | | | |
| | | JACK | |
| CN101 | PQJJ2H003Z | JACK, TEL/DC IN | |
| | | | |
| | | | |
| | | RESISTORS | |
| R101 | PQ4R10XJ155 | 1.5M | |
| R102 | PQ4R10XJ155 | 1.5M | |
| R103 | PQ4R10XJ563 | 56K | |
| R104 | PQ4R10XJ473 | 47K | |
| R105 | ERDS2TJ104 | 100K | |
| R106 | ERDS2TJ472 | 4.7K | |
| R107 | PQ4R10XJ104 | 100K | |
| R108 | PQ4R10XJ472 | 4.7K | |
| R115 | PQ4R10XJ222 | 2.2K | |
| R116 | PQ4R10XJ393 | 39K | |
| R117 | ERDS1TJ330 | 33 | S |
| R118 | PQ4R10XJ152 | 1.5K | |
| R119 | PQ4R10XJ332 | 3.3K | |
| R120 | PQ4R10XJ470 | 47 | |
| R132 | ERJ3GEYJ123 | 12K | |
| R133 | PQ4R10XJ472 | 4.7K | |
| R134 | ERJ3GEYJ224 | 220K | |
| R135 | ERJ3GEYJ561 | 560 | |
| R136 | ERJ3GEYJ472 | 4.7K | |
| R137 | ERJ3GEYJ100 | 10 | |
| R205 | ERJ3GEYJ101 | 100 | |
| R206 | ERJ3GEYJ101 | 100 | |
| R207 | ERJ3GEYJ102 | 1K | |
| R208 | ERJ3GEYJ104 | 100K | |
| R209 | ERJ3GEYJ104 | 100K | |
| R210 | ERJ3GEYJ102 | 1K | |
| R212 | PQ4R10XJ473 | 47K | |
| R213 | ERJ3GEYJ471 | 470 | |
| R214 | ERJ3GEYJ103 | 10K | |
| R215 | ERJ3GEYJ104 | 100K | |
| R216 | ERJ3GEYJ154 | 150K | |
| R217 | ERJ3GEYJ103 | 10K | |
| R218 | ERJ3GEYJ103 | 10K | |
| R219 | ERJ3GEYJ222 | 2.2K | |
| R222 | ERJ3GEYJ104 | 100K | |
| R223 | PQ4R10XJ104 | 100K | |
| R229 | ERJ3GEYJ104 | 100K | |
| R233 | ERJ3GEYJ102 | 1K | |
| R234 | ERJ3GEYJ102 | 1K | |
| R235 | ERJ3GEYJ102 | 1K | |
| R351 | PQ4R10XJ473 | 47K | |
| R352 | ERDS1TJ331 | 330 | S |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R353 | PQ4R10XJ180 | 18 | |
| R358 | PQ4R10XJ221 | 220 | |
| R359 | PQ4R10XJ473 | 47K | |
| R360 | ERJ3GEYJ103 | 10K | |
| R361 | ERDS1TJ100 | 10 | S |
| R362 | PQ4R10XJ104 | 100K | |
| R364 | PQ4R10XJ681 | 680 | |
| R407 | ERJ3GEYJ823 | 82K | |
| R408 | ERJ3GEYJ103 | 10K | |
| R409 | ERJ3GEYJ472 | 4.7K | |
| R410 | ERJ3GEYJ333 | 33K | |
| R411 | ERJ3GEYJ333 | 33K | |
| R412 | ERJ3GEYJ153 | 15K | |
| R413 | ERJ3GEYJ333 | 33K | |
| R414 | ERJ3GEYJ473 | 47K | |
| R415 | ERJ3GEYJ223 | 22K | |
| R416 | ERJ3GEYJ153 | 15K | |
| R417 | ERJ3GEYJ153 | 15K | |
| R418 | ERJ3GEYJ153 | 15K | |
| R419 | ERJ3GEYJ104 | 100K | |
| R420 | ERJ3GEYJ124 | 120K | |
| R421 | ERJ3GEYJ683 | 68K | |
| R424 | ERJ3GEYJ822 | 8.2K | |
| R429 | PQ4R10XJ331 | 330 | |
| R430 | ERJ3GEYJ393 | 39K | |
| R508 | ERJ3GEY0R00 | 0 | |
| R801 | ERD25VJ105 | 1M | |
| R803 | ERJ3GEYJ103 | 10K | |
| R804 | ERJ3GEYJ103 | 10K | |
| R805 | ERJ3GEYJ103 | 10K | |
| R808 | ERJ3GEYJ103 | 10K | |
| R902 | ERJ3GEY0R00 | 0 | |
| D203 | ERJ3GEYJ102 | 1K | |
| C802 | ERJ3GEY0R00 | 0 | |
| | | | |
| | | | |
| | | CAPACITORS | |
| C101 | PQCUV1H183KB | 0.018 | |
| C102 | PQCUV1H183KB | 0.018 | |
| C103 | PQCUV1H102J | 0.001 | S |
| C104 | ECKD2H681KB | 680P | S |
| C105 | ECKD2H681KB | 680P | S |
| C106 | PQCUV1E333MD | 0.033 | S |
| C107 | PQCUV1H103ZF | 0.01 | |
| C112 | ECEA1VKS100 | 10 | S |
| C113 | PQCUV1H101JC | 100P | |
| C114 | PQCUV1H103KB | 0.01 | |
| C115 | ECEA1CKS100 | 10 | S |
| C116 | PQCUV1E683KB | 0.068 | |
| C121 | PQCUV1E104MD | 0.1 | S |
| C123 | PQCUV1E104MD | 0.1 | S |
| C124 | ECEA1CKS100 | 10 | S |
| C125 | PQCUV1H103KB | 0.01 | |
| C201 | ECEA0JU102 | 1000 | |
| C202 | PQCUV1E104MD | 0.1 | S |
| C203 | PQCUV1C224KB | 0.22 | |
| C204 | PQCUV1H102J | 0.001 | S |
| C205 | PQCUV1E104MD | 0.1 | S |
| C206 | ECEA0JU102 | 1000 | |
| C207 | PQCUV1E104MD | 0.1 | S |
| C208 | ECUV1H390JCV | 39P | |
| C209 | ECUV1H390JCV | 39P | |
| C211 | ECUV1H472KBV | 0.0047 | |
| C220 | PQCUV1H102J | 0.001 | S |
| C352 | PQCUV1E104MD | 0.1 | S |
| C353 | ECEA1CKS100 | 10 | S |
| C354 | ECUV1H102KBV | 0.001 | |
| C357 | PQCUV1E104MD | 0.1 | S |
| C363 | PQCUV1E104MD | 0.1 | S |
| C365 | ECUV1H102KBV | 0.001 | |
| C401 | PQCUV1H222KB | 0.0022 | |
| C402 | PQCUV1E104MD | 0.1 | S |
| C404 | PQCUV1E104MD | 0.1 | S |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C405 | ECEA1CKS220 | 22 | S |
| C406 | ECEA1CKS220 | 22 | S |
| C407 | PQCUV1E104MD | 0.1 | S |
| C408 | ECEA1AU101 | 100 | |
| C409 | PQCUV1E104MD | 0.1 | S |
| C410 | PQCUV1E333MD | 0.033 | S |
| C411 | PQCUV1E104MD | 0.1 | S |
| C412 | ECEA1VKS4R7 | 4.7 | S |
| C413 | ECUV1H122KBV | 0.0012 | |
| C414 | ECUV1H152KBV | 0.0015 | |
| C415 | ECEA1HKS2R2 | 2.2 | S |
| C416 | ECUV1H182KBV | 0.0018 | |
| C417 | ECUV1H682KBV | 0.0068 | |
| C418 | ECEA1VKS4R7 | 4.7 | S |
| C419 | PQCUV1E104MD | 0.1 | S |
| C420 | PQCUV1E683KB | 0.068 | |
| C421 | PQCUV1H222KB | 0.0022 | |
| C422 | PQCUV1H103KB | 0.01 | |
| C423 | ECUV1H332KBV | 0.0033 | |
| C424 | ECUV1H682KBV | 0.0068 | |
| C425 | PQCUV1C105ZF | 1 | |
| C429 | PQCUV1E333MD | 0.033 | S |
| C801 | ECKDRS102MB | 0.001 | ⚠ |
| C804 | ECUV1H101JCV | 100P | |
| C806 | ECUV1H101JCV | 100P | |
| C807 | ECUV1H101JCV | 100P | |
| C809 | PQCUV1E104MD | 0.1 | S |
| | | | |
| | | | |
| | | RF UNIT PARTS | |
| | | | |
| PCB2 | PQLZ10006Z | P.C.BOARD ASS'Y (RTL) | |

## 26.2. Handset

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | CABINET AND ELECTRICAL PARTS | |
| | | | |
| 101 | PQKM10367Z1 | FRONT CABINET | |
| | | (FOR KX-TC1400B) | |
| 101 | PQKM10367Z2 | FRONT CABINET | |
| | | (FOR KX-TC1400W) | |
| 102 | PQKF10278R1 | CABINET COVER | |
| | | (FOR KX-TC1400B) | |
| 102 | PQKF10278R2 | CABINET COVER | |
| | | (FOR KX-TC1400W) | |
| 103 | PQKK10089Z1 | BATTERY COVER | S |
| | | (FOR KX-TC1400B) | |
| 103 | PQKK10089Z2 | BATTERY COVER | S |
| | | (FOR KX-TC1400W) | |
| 104 | PQSA10083Z | ANTENNA (KX-TC1400B) | |
| 104 | PQSA10083Y | ANTENNA (KX-TC1400W) | |
| 105 | PQAX3P23Z | SPEAKER | |
| 106 | PQJT10150Z | CHARGE TERMINAL | |
| 107 | PQSX10092Z | KEYBOARD SWITCH | |
| | | (KX-TC1400B) | |
| 107 | PQSX10092Y | KEYBOARD SWITCH | |
| | | (KX-TC1400W) | |
| 108 | PQXA36SVC | BATTERY | S |
| 109 | PQGT13561Z | NAME PLATE (KX-TC1400B) | |
| 109 | PQGT13563Z | NAME PLATE (KX-TC1400W) | |
| 110 | PQHR10638Z | SPACER | |
| 111 | PQHG10527Z | SPACER | |
| 112 | PQHR10639Z | SP HOLDER | |
| 113 | PQHS10303Z | INSULATOR | |
| | | | |
| | | | |
| | | MAIN P.C.BOARD PARTS | |
| | | | |
| PCB100 | PQWPTC1400BR | P.C.BOARD ASS'Y (RTL) | |
| | | | |
| | | | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | ICS | |
| IC201 | AN6139FA | IC | |
| IC901 | PQVI9046G014 | IC | |
| | | | |
| | | | |
| | | TRANSISTORS | |
| Q201 | PQVTD123T146 | TRANSISTOR(SI) | S |
| Q202 | PQVTD123T146 | TRANSISTOR(SI) | S |
| Q203 | 2SD1819A | TRANSISTOR(SI) | |
| Q204 | 2SD1819A | TRANSISTOR(SI) | |
| | | | |
| | | | |
| | | DIODES | |
| D201 | PQVDPTZTE25 | DIODE(SI) | S |
| D202 | MA8150 | DIODE(SI) | |
| D203 | MA111 | DIODE(SI) | |
| D204 | MA736 | DIODE(SI) | |
| D212 | MA111 | DIODE(SI) | |
| D901 | MA2ZD1400 | DIODE(SI) | |
| LED902 | PQVDBR1111C | DIODE(SI) | |
| LED903 | PQVDSML310MT | DIODE(SI) | |
| | | | |
| | | | |
| | | COILS | |
| L201 | PQLQR3ER10K | COIL | |
| L202 | PQLQR3ER10K | COIL | |
| L203 | PQLQR3ER10K | COIL | |
| C269 | MQLRE18NJF | COIL | |
| | | | |
| | | | |
| | | VARIABLE RESISTORS | |
| VR201 | EVN5ESX50B15 | VARIABLE RESISTOR | |
| VR202 | EVN5ESX50B54 | VARIABLE RESISTOR | |
| | | | |
| | | | |
| | | CRYSTAL OSCILLATORS | |
| X901 | PQVCL3276N9Z | CRYSTAL OSCILLATOR | |
| X902 | PQVBTCC3.99M | CERAMIC FILTER | |
| | | | |
| | | | |
| | | OTHERS | |
| CHG(+) | PQJT10152Z | CHARGE TERMINAL | |
| CHG(-) | PQJT10152Z | CHARGE TERMINAL | |
| CHG(C) | PQJT10152Z | CHARGE TERMINAL | |
| CN202 | PQJP2D13Z | CONNECTOR | |
| E100 | PQJM122Z | MICROPHONE | |
| E101 | PQEFBDB111GF | BUZZER | |
| | | | |
| | | | |
| | | RESISTORS | |
| R201 | ERJ3GEYJ221 | 220 | |
| R202 | ERJ3GEYJ332 | 3.3K | |
| R203 | ERJ3GEYJ103 | 10K | |
| R204 | ERJ3GEYJ120 | 12 | |
| R205 | ERJ3GEYJ393 | 39K | |
| R206 | ERJ3GEYJ123 | 12K | |
| R207 | ERJ3GEYJ104 | 100K | |
| R208 | ERJ3GEYJ222 | 2.2K | |
| R209 | ERJ3GEYJ563 | 56K | |
| R210 | ERJ3GEYJ104 | 100K | |
| R211 | ERJ3GEYJ153 | 15K | |
| R212 | ERJ3GEY0R00 | 0 | |
| R213 | ERJ3GEYJ103 | 10K | |
| R214 | ERJ3GEYJ100 | 10 | |
| R215 | ERJ3GEYJ153 | 15K | |
| R217 | ERJ3GEYJ220 | 22 | |
| R218 | ERJ3GEYJ103 | 10K | |
| R219 | ERJ3GEY0R00 | 0 | |
| R220 | ERJ3GEYJ103 | 10K | |
| R221 | ERJ3GEYJ101 | 100 | |
| R223 | ERJ3GEYJ102 | 1K | |
| R224 | ERJ3GEYJ333 | 33K | |
| R228 | ERJ3GEYJ333 | 33K | |

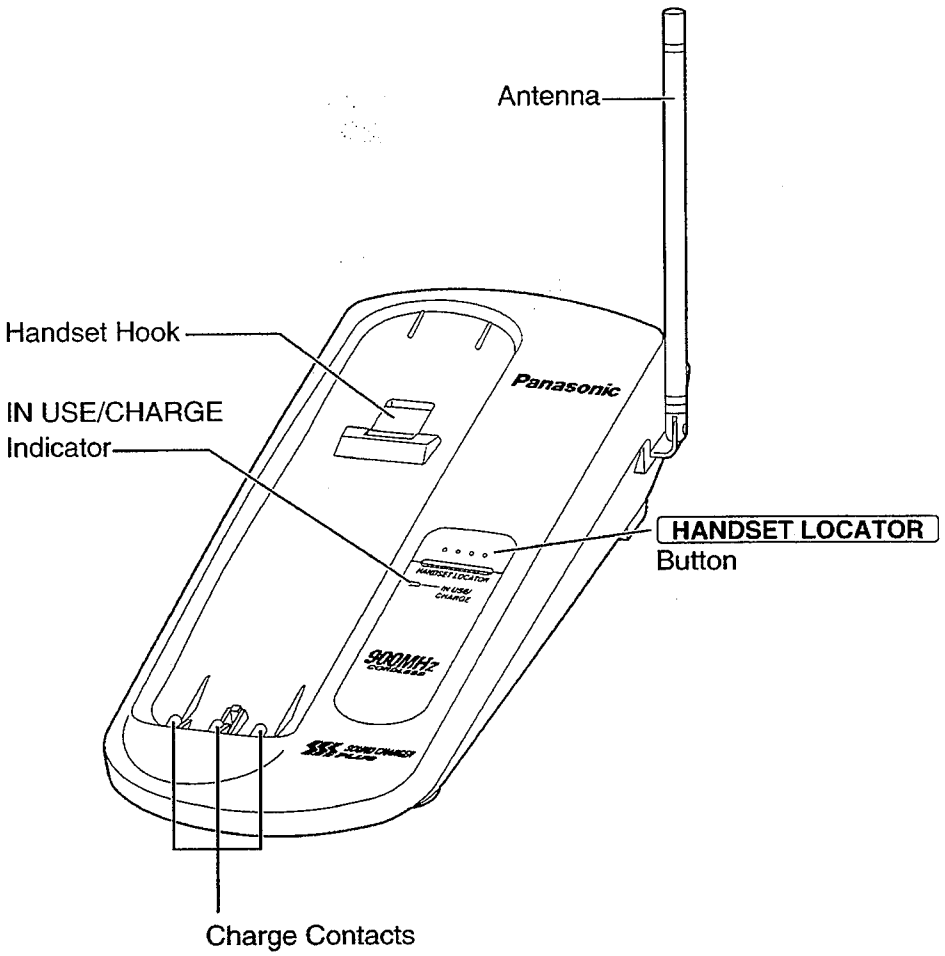
| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R229 | ERJ3GEY0R00 | 0 | |
| R231 | ERJ3GEYJ330 | 33 | |
| R232 | ERJ3GEYJ273 | 27K | |
| R233 | ERJ3GEYJ273 | 27K | |
| R234 | ERJ3GEYJ823 | 82K | |
| R235 | ERJ3GEYJ104 | 100K | |
| R240 | ERJ3GEYJ153 | 15K | |
| R241 | ERJ3GEYJ222 | 2.2K | |
| R251 | ERJ3GEYJ333 | 33K | |
| R254 | ERJ3GEYJ222 | 2.2K | |
| R260 | ERJ3GEYJ104 | 100K | |
| R271 | ERJ3GEY0R00 | 0 | |
| R272 | ERJ3GEY0R00 | 0 | |
| R274 | ERJ3GEYJ103 | 10K | |
| R280 | ERJ3GEY0R00 | 0 | |
| R901 | ERJ3GEYJ102 | 1K | |
| R902 | ERJ3GEYJ334 | 330K | |
| R904 | ERJ3GEYJ681 | 680 | |
| R905 | ERJ3GEYJ104 | 100K | |
| R906 | ERJ3GEYJ331 | 330 | |
| R908 | ERJ3GEYJ105 | 1M | |
| R910 | ERJ3GEYJ101 | 100 | |
| R911 | ERJ3GEYJ101 | 100 | |
| R913 | ERJ3GEYJ105 | 1M | |
| R914 | ERJ3GEYJ102 | 1K | |
| R915 | ERJ3GEYJ102 | 1K | |
| R916 | ERJ3GEYJ105 | 1M | |
| R919 | ERJ3GEYJ100 | 10 | |
| R920 | ERJ3GEYJ101 | 100 | |
| R921 | ERJ3GEYJ102 | 1K | |
| R922 | ERJ3GEYJ101 | 100 | |
| | | | |
| | | | |
| | | CAPACITORS | |
| C202 | PQCUV1E104MD | 0.1 | S |
| C203 | ECUV1H101JCV | 100P | |
| C204 | ECUV1H103KBV | 0.01 | |
| C205 | ECUV1H103KBV | 0.01 | |
| C206 | ECST0JY106 | 10 | |
| C208 | ECUV1H103KBV | 0.01 | |
| C209 | ECEA1CKS470 | 47 | S |
| C210 | ECUV1C104KBV | 0.1 | |
| C212 | ECUV1H103KBV | 0.01 | |
| C213 | ECUV1C104KBV | 0.1 | |
| C214 | ECUV1H472KBV | 0.0047 | |
| C216 | ECUV1H103KBV | 0.01 | |
| C217 | ECUV1C683KBV | 0.068 | |
| C218 | ECUV1H103KBV | 0.01 | |
| C219 | ECUV1H103KBV | 0.01 | |
| C220 | ECUV1H182KBV | 0.0018 | |
| C221 | ECUV1C104ZFV | 0.1 | |
| C223 | ECUV1C683KBV | 0.068 | |
| C224 | PQCUV1C474ZF | 0.47 | |
| C225 | ECST0JY106 | 10 | |
| C226 | ECEA0JKA331 | 330 | |
| C228 | ECUV1H682KBV | 0.0068 | |
| C231 | ECUV1C104KBV | 0.1 | |
| C232 | PQCUV1C105ZF | 1 | |
| C233 | ECUV1C104KBV | 0.1 | |
| C234 | PQCUV1C105ZF | 1 | |
| C235 | PQCUV1C105ZF | 1 | |
| C236 | PQCUV1C474ZF | 0.47 | |
| C237 | PQCUV1C105ZF | 1 | |
| C238 | ECUV1H101JCV | 100P | |
| C239 | ECUV1C104ZFV | 0.1 | |
| C240 | ECUV1H471JCV | 470P | |
| C242 | ECUV1C104ZFV | 0.1 | |
| C244 | ECUV1H472KBV | 0.0047 | |
| C247 | ECUV1C104KBV | 0.1 | |
| C251 | ECUV1H822KBV | 0.0082 | |
| C259 | ECUV1C104KBV | 0.1 | |
| C262 | ECUV1C104ZFV | 0.1 | |
| C268 | ECUV1H080DCV | 8P | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C270 | ERJ3GEY0R00 | 0 | |
| C271 | ECUV1C104ZFV | 0.1 | |
| C901 | ECUV1C104ZFV | 0.1 | |
| C902 | ECUV1C104KBV | 0.1 | |
| C904 | PQCUV1E104MD | 0.1 | S |
| C905 | ECEA0JK221 | 220 | S |
| C906 | ECUV1H180JCV | 18P | |
| C907 | ECUV1H180JCV | 18P | |
| | | | |
| | | | |
| | | RF UNIT PARTS | |
| | | | |
| PCB200 | PQLZ10005Z | P.C.BOARD ASS'Y (RTL) | |
| | | | |

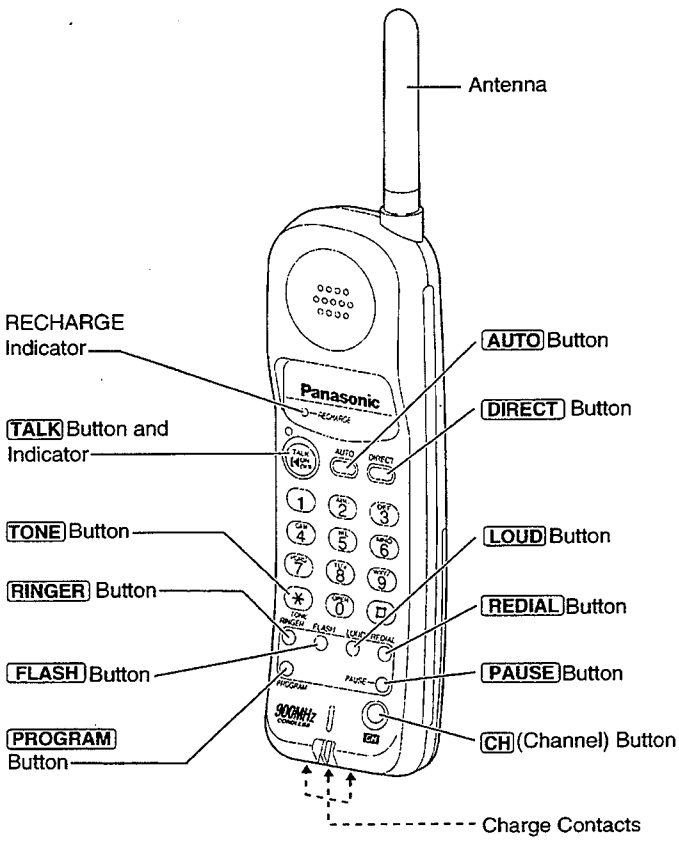
## 26.3. KX-TC1400B/KX-TC1400W

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | ACCESSORIES | |
| | | | |
| A1 | KX-TCA1-G | AC ADAPTOR | |
| A2 | PQJA10075Z | TEL CORD | |
| A3 | PQQX12148Y | INSTRUCTION BOOK | |
| | | | |
| | | | |
| | | PACKING MATERIALS | |
| | | | |
| P1 | XZB20X35A01 | PROTECTION COVER | |
| P2 | XZB10X35A02 | PROTECTION COVER | |
| P3 | PQPN10664Z | CUSHION | |
| P4 | PQPK12732Z | GIFT BOX (KX-TC1400B) | |
| P4 | PQPK12755Z | GIFT BOX (KX-TC1400W) | |

# 2 LOCATION OF CONTROLS

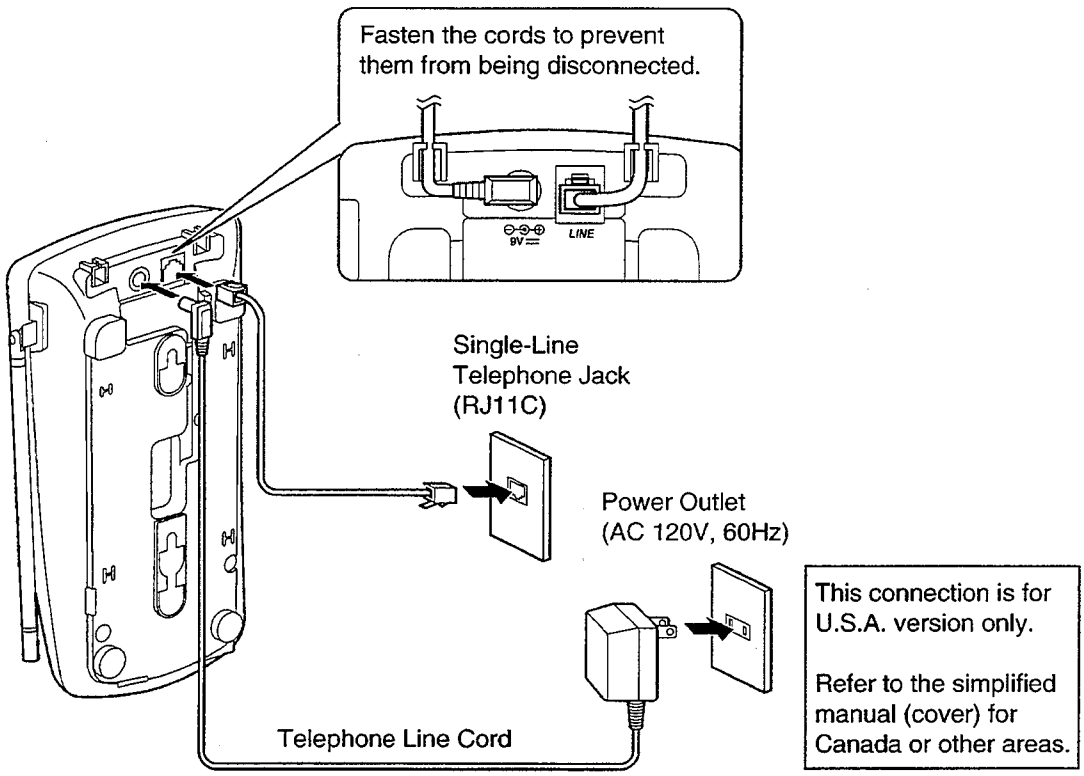



(Base Unit)




(Handset)

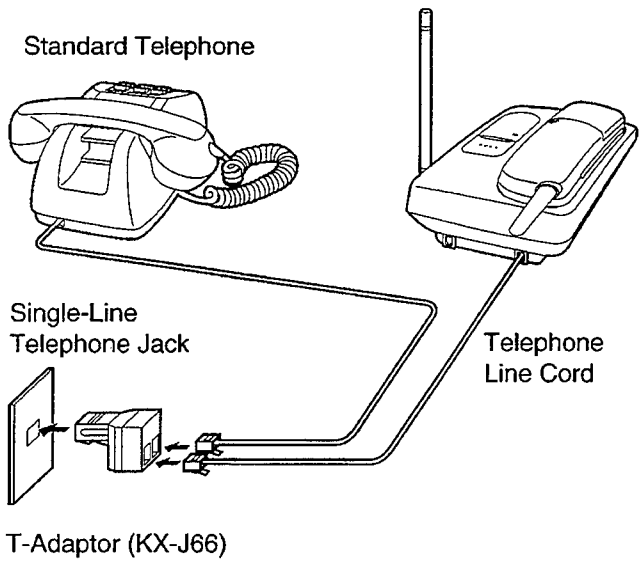
# 3 CONNECTION TO A TELEPHONE LINE


Fasten the cords to prevent them from being disconnected.
9V
LINE
Single-Line Telephone Jack (RJ11C)
Power Outlet (AC 120V, 60Hz)
This connection is for U.S.A. version only.
Refer to the simplified manual (cover) for Canada or other areas.
Telephone Line Cord

**Note:**

- USE ONLY WITH Panasonic AC ADAPTOR KX-TCA1-G.
- The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)

## 3.1. Adding Another Phone



# 4 DISASSEMBLY INSTRUCTIONS

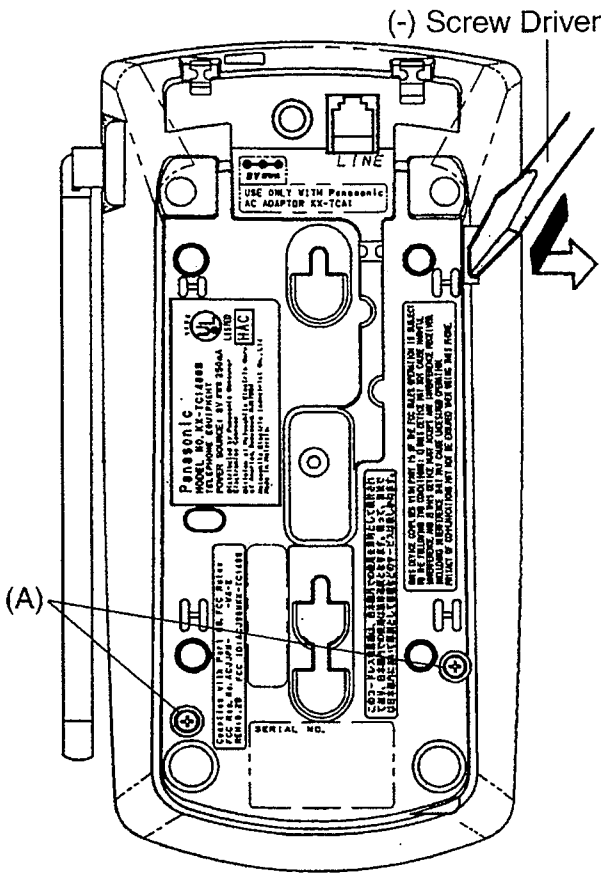
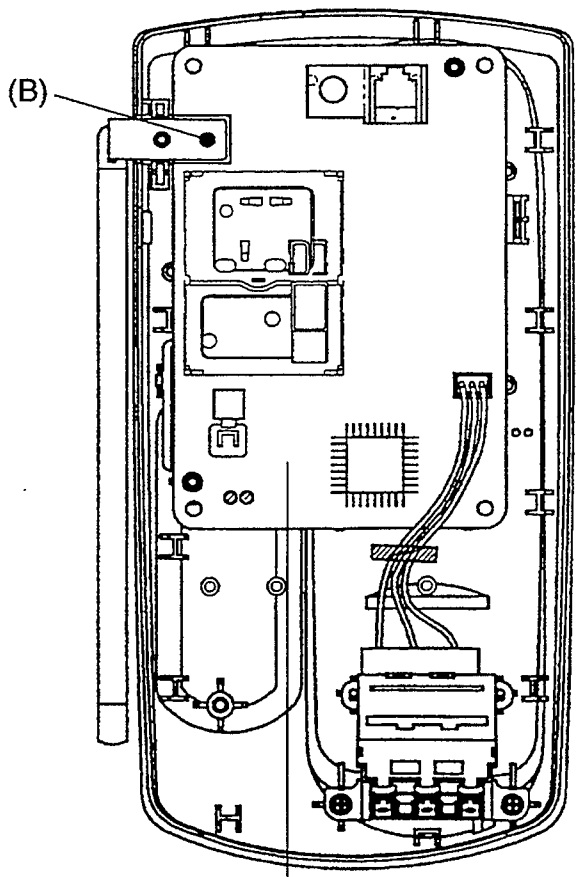



Fig. 1




Remove the P.C.Board Fig. 2

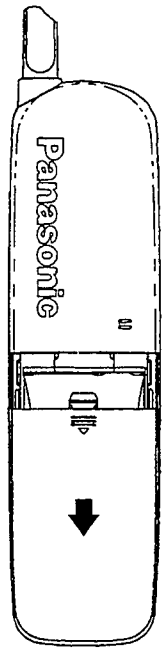



Fig. 3

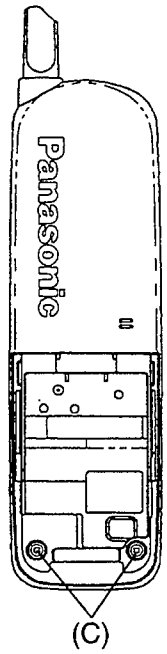



Fig. 4

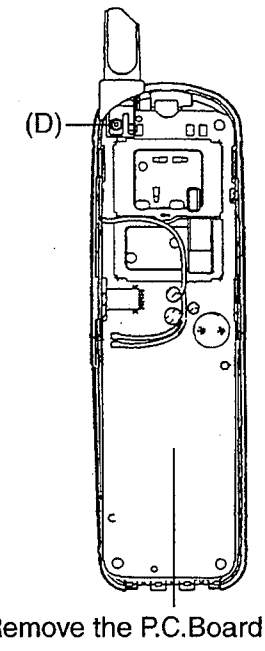



Fig. 5

| Ref No. | Procedure | Shown in Fig.- | To Remove | Remove |
|---|---|---|---|---|
| 1 | 1 | 1 | Lower Cabinet | Screws (3 X 14) (A) X 2 |
| 2 | 1, 2 | 2 | P.C. Board | Screw (3 X 14) (B) X 1 |
| 3 | 3 | 3 | Battery Cover | Remove the Battery Cover |
| 4 | 3, 4 | 4 | Rear Cabinet | Screws (2.6 X 14) (C) X 2 |
| 5 | 3~5 | 5 | P.C. Board | Screw (3 X 14) (D) X 1 |

**Note:**

When removing lower cabinet of Base Unit, remove screws (A) as shown Fig. 1. After that, insert (-) screw driver to a hole, and detach hook inside cabinet pressing screw driver in the direction of arrow.

# 5 ADJUSTMENT

## 5.1. Objective

This procedure will enable the technician to make adjustments to the KX-TC1400B/KX-TC1400W HANDSET and BASE UNIT.

## 5.2. General Information

This procedure has 2 sections. The first section instructs the technician on how to align the HANDSET. We recommend aligning the HANDSET first, since you will need the HANDSET to align the BASE UNIT. The second section aligns the BASE UNIT. You can use either section separately, or together to align the entire cordless phone unit.

At the beginning of each section, you will find a preparation procedure instructing you on how to prepare the unit to the point of placing the unit in TEST mode. Please follow this procedure to insure proper alignment.

Each section's procedure consists of Adjustment Items adjusting one specific variable hardware component.
Each Item lists the equipment needed, how to connect and setup the equipment, how to make the adjustment, and how to verify the adjustment if necessary.

Before the actual procedure, you will find a procedure detailing how to place that part in TEST mode. You will have to perform this procedure before each individual Adjustment Item.

Once aligned, please remove all equipment connections and solder points, and reassemble the unit. As a final check, power up the phone and check for HANDSET linking with the BASE UNIT.

## 5.3. Equipment

1. Radio Tester : Marconi Model 2295A or later.
2. 4.5 digit Digital Multimeter : B&K Model 2833 or compatible.
3. Oscilloscope, single or dual channel : Panasonic VP-5512P100 or compatible.
4. Telephone Analyzer : B&K Model 1050 or compatible.
5. DC Power Supply, capable of supply 3.9V DC at 100mA NOTE : only needed if Telephone Analyzer does not have DC VOLTS output available.
6. Corded Telephone.
7. High Frequency Cable : BNC end to open end.
8. Audio Cable : BNC end to alligator clip end.
9. High Frequency Adjustment Tool:
10. Isolation Capacitors, quantity of 2, 10 µF maximum, 50V DC or greater.
11. Soldering Iron, solder, and various tools.

## 5.4. Handset Preparation

Please perform the following steps to prepare the HANDSET for alignment. Please refer to the HANDSET REFERENCE DRAWING for connection and test point locations.

1. Remove battery cover and battery.
2. Remove both screws at the case bottom.
3. Grabbing hold of the back near the bottom, gently pry off the back of the case.
4. Remove the antenna mounting screw. Pull out the antenna.
5. Unsolder both speaker connections on P.C.Board.
6. Remove the HANDSET P.C.Board.
7. Remove the keypad membrane.
8. Solder High Frequency Cable open end to ANT and RF GND points.
9. Using the Digital Multimeter, measure DC VOLTS output on the Telephone Analyzer. Adjust the output voltage to 3.9V DC.
10. Solder battery connection wires at the points shown in the HANDSET REFERENCE DRAWING. Solder the positive lead to TP-$V_{DD}$, towards the component side of the P.C.Board. Solder the negative lead to the TP-$V_{SS}$. **DO NOT APPLY POWER TO THE HANDSET AT THIS TIME!!!!!!**
11. Solder a small, insulated piece of wire to **GND** as well.
12. Solder 1 isolation capacitor's positive lead to **SP+** test point. When soldering, keep the lead close to the P.C.Board as possible since you will lay the keypad membrane over part of this lead.
13. Solder a small, short, insulated wire to **MIC** test point.
14. Lay the keypad membrane over the keypad switch contacts.

## 5.5. Symptom/Remedy Table

If you have one of the listed symptoms, please refer to this table and make the appropriate adjustments.

| SYMPTOM | REMEDY |
|---|---|
| Speaker level is unstable | Adjust Item (A). |
| Does not link with BASE UNIT | Adjust Items (B) and (C). |
| TX sound is unstable | Adjust Item (C) and (D). |

## 5.6. Handset Adjustment Preparation

Please perform the following procedure before starting the Adjustment Procedure. You only have to perform this procedure only once to complete all Items, but you will have to perform this procedure to make an individual Adjustment Item.

1. You will need all equipment listed in the Item's EQUIPMENT section.
2. Setup all equipment as specified in the Item's PROCEDURE section SETUP portion.
3. Apply power to the HANDSET, and press TALK key.
4. Press 5, 8 and 0 keys at the same time.
5. You should hear the HANDSET beep. Release the 3 keys. If you do not hear a beep, remove the power from the HANDSET and repeat the last 2 steps.
6. Press the **TALK** key. HANDSET should now be in TEST MODE (CH 1 TALK). The TALK should be on. If the HANDSET is not in TEST MODE, remove the power and repeat the last 3 steps.
7. Remove the keypad membrane and lay it aside to prevent pressing some button by mistake during alignment.

## 5.7. Adjustment Procedure

| ADJUSTMENT ITEM DESCRIPTION | (A) SP Output |
|---|---|
| EQUIPMENT | **Marconi**<br>SETUP Put in Receiver Test Mode.<br>RF GEN<br>FREQ 902.1000 MHz<br>LEVEL 60 dB $\mu$ V<br>SET MOD<br>FREQ 1.000 kHz<br>LEVEL 6.000 kHz<br>High Frequency Cable to RF Connector. Audio Cable positive lead to isolation capacitor, negative lead to **GND**, BNC end to AF INPUT connector. |
| PROCEDURE | Adjust **VR202** until **AF VOLTS** equals **-32 dBV +/- 1 dB (-30dBm +/- 1dB)**<br><br>Note<br>This voltage reading is with no speaker or load attached to the HANDSET P.C.Board. |

| ADJUSTMENT ITEM DESCRIPTION | (B) RX sensitivity confirmation and squelch adjustment |
|---|---|
| EQUIPMENT | **Marconi**<br>SETUP Put in Receiver Test Mode.<br>RF GEN<br>FREQ 902.1000 MHz<br>LEVEL 60 dB $\mu$ V<br>SET MOD<br>FREQ 1.000 kHz<br>LEVEL 6.000 kHz<br>High Frequency cable to RF Connector.<br>Audio Cable positive lead to isolation capacitor, negative lead to **GND**, BNC end to AF INPUT connector.<br>**Oscilloscope**<br>SETUP X1 probe connected to INPUT 1. Probe ground connected to **GND**.<br>TIME/DIV 1ms<br>VOLT/DIV 1V<br>Auto trigger |
| PROCEDURE | On Marconi, press SINAD until the display shows the SINAD value and press **dB**. Then press RF **GEN** and **LEVEL**. Lower RF **GEN LEVEL** at SINAD 12 dB and confirm that RF GEN LEVEL is less than **+1 dBµV (+7 dBµVem*f*)**. When level is more than +1 dBµV (+7 dBµVem*f*), change RF unit.<br>Attach the oscilloscope probe to SQL test point. When RF GEN LEVEL is set at +5 dBµV (+11 dBµVem*f*), confirm that the signal of SQL TEST POINT is Low.<br>After that, set RF GEN LEVEL at -17 dBµV (-11 dBµVem*f*), and confirm that the signal of SQL TEST POINT is High.<br>When level is NG, change RF unit. |

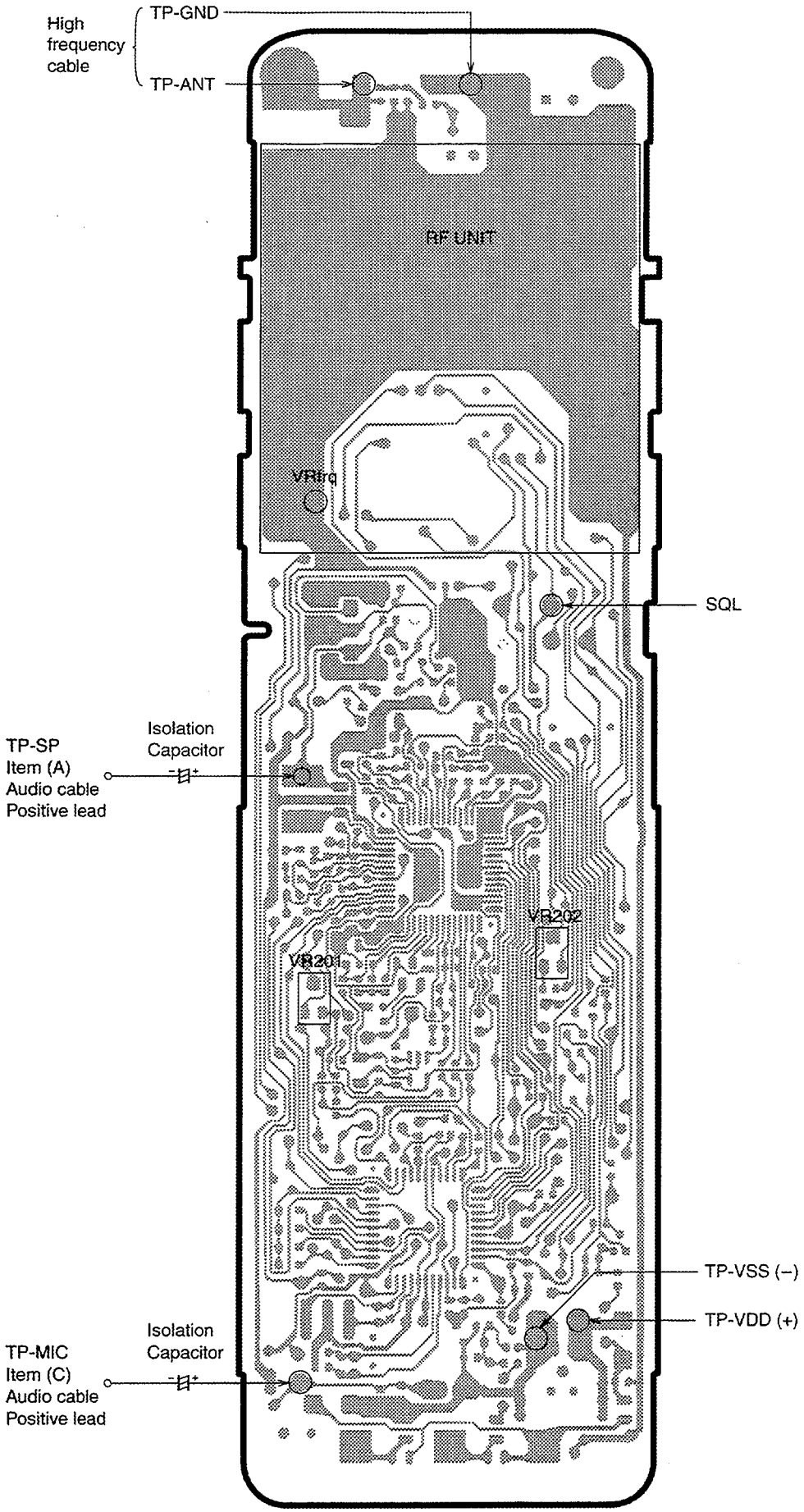
| ADJUSTMENT ITEM DESCRIPTION | (C) MIC Input (MIC Modulation) |
|---|---|
| EQUIPMENT | **Marconi**<br>SETUP Put in Transmitter Test mode.<br>**AF GEN**<br>**FREQ 1.000 KHz**<br>**LEVEL -48 dBm (3mV) at 600 ΩLoad**<br>Connect High Frequency Cable to RF connector.<br>Connect Audio Cable positive lead to **MIC**, negative lead to **GND**, BNC end to AF GEN OUTPUT.<br>Connect the isolation capacitor to positive lead side. |
| PROCEDURE | Adjust **VR201** until Marconi **MOD LEVEL** equals **6 kHz +/- 0.5 kHz.** |

| ADJUSTMENT ITEM DESCRIPTION | (D) Standard Frequency |
|---|---|
| EQUIPMENT | **Marconi**<br>SETUP Put in Transmitter Test mode.<br>**AF GEN**<br>**FREQ 1.000 kHz**<br>**LEVEL -48 dBm (3mV) at 600 ΩLoad**<br>Connect High Frequency Cable to RF connector.<br>Connect Audio Cable positive lead to **MIC**, negative lead to **GND**, BNC end to AF GEN OUTPUT. |
| PROCEDURE | Adjust **VRfrq** so that **926.100 MHz +/- 3kHz.**<br><br>Note<br>This Item's setup is exactly the same as Item (C). If you have done Item (C), simply look at TX FREQ and make the adjustment. |

Once aligned, please perform the following procedure.

1. Disconnect all equipment and solder connections. Use solder wick to clean up any solder you added.
2. Install the keypad membrane on top of the HANDSET keys.
3. Install the HANDSET P.C.Board.
4. Solder speaker wires back onto the P.C.Board observing correct polarity.
5. If you will align Item (C) RX Input in BASE UNIT, then solder a short wire across the MIC leads. Remember to unsolder this wire after you completed the BASE UNIT alignment.
6. Insert antenna into the case.
7. Install antenna and top P.C.Board mounting screws.
8. Install case back and bottom mounting screws.
9. DO NOT INSTALL THE BATTERY AT THIS TIME!!!!!!

## 5.8. Handset Reference Drawing



## 5.9. Base Unit Preparation

Please prepare the BASE UNIT before performing any adjustment procedures. Refer to the BASE UNIT REFERENCE DRAWING for connection and test point locations.

1. Unscrew all 2 screws from bottom of cabinet. Remove cabinet bottom.
2. Remove the antenna screw.
3. Solder a test mode diode **D902** as shown on the BASE UNIT REFERENCE DRAWING.
4. Solder one isolation capacitor's positive lead to the main P.C.Board **TIP** point and the other isolation capacitor's positive lead to the main P.C.Board **RING** point.
5. Connect the Audio Cable, positive lead to the **TIP** isolation capacitor's free lead, the negative lead to the **RING** isolation capacitor's free lead. Do not connect the BNC end of the cable.
6. Connect the Telephone Analyzer **PHONE TEST JACK #1** to the BASE UNIT P.C.Board phone jack.
7. Connect the corded telephone to the Telephone Analyzer **PHONE TEST JACK #2.**
8. Remove main P.C.Board from cabinet top and place beside cabinet.
9. Solder High Frequency Cable open end to ANT and TP-GR as specified in BASE UNIT REFERENCE DRAWING.

## 5.10. Symptom/Remedy Table

If you have one of the listed symptoms, please refer to this table and make the appropriate adjustments.

| SYMPTOM | REMEDY |
|---|---|
| Transmission sound to HANDSET receiver is unstable | Adiust liems (A) and (C). |
| Does not link with HANDSET | Adiust liems (C) and (D). |

## 5.11. Base Unit Adjustment Preparation

Please perform the following steps to prepare the BASE UNIT for the Adjustment procedure.

1. Connect P.C.Board to all equipment as specified in **PROCEDURE** section, **SETUP** portion.
2. Connect AC Adaptor to AC Jack of BASE UNIT main P.C.Board.
3. Press **LOCATOR/INTERCOM** button twice. BASE UNIT P.C.Board should be in TEST MODE (CH1 TALK). If unit is not in TEST MODE, remove power from P.C.Board and repeat last step.

| ADJUSTMENT ITEM DESCRIPTION | (A) Standard Frequency |
|---|---|
| EQUIPMENT | **Marconi**<br>SETUP Place in Transmitter Test mode.<br>**AF GEN**<br>**FREQ 1.000kHz**<br>**LEVEL -25 dBm (44mV) at 600 Ω Load**<br>High Frequency Cable to RF connector.<br><br>**Telephone Analyzer**<br>**Corded Phone**<br>Take phone off hook |
| PROCEDURE | Adjust **VRfrq** so that **902.100 MHz +/- 3kHz.**<br><br>Note<br>This item's setup is exactly the same as Item (C). If you have done Item (C), simply look at TX FREQ on the Marconi and make the adjustment. |

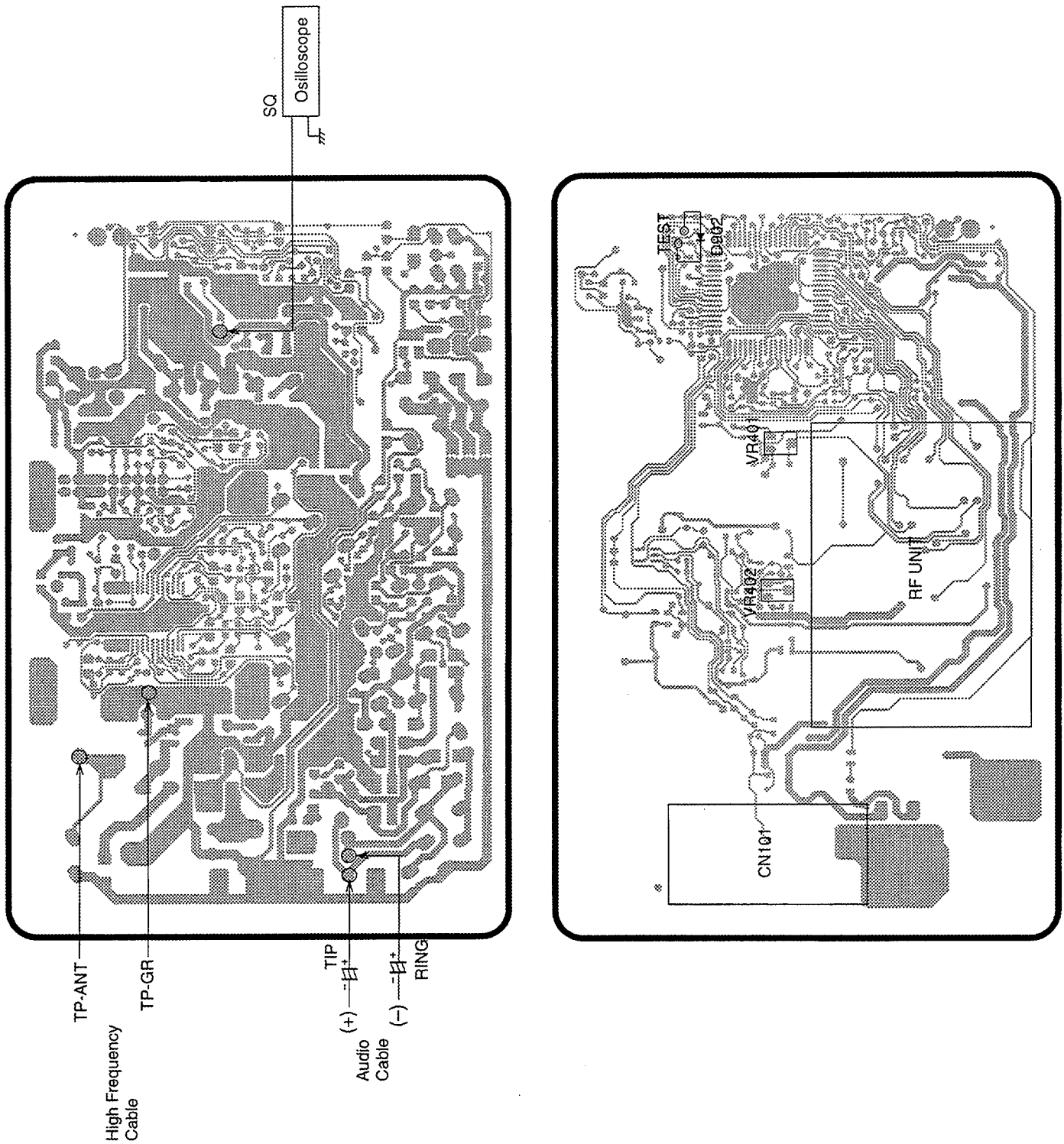
| ADJUSTMENT ITEM DESCRIPTION | (B) TX Output |
|---|---|
| EQUIPMENT | **Marconi**<br>SETUP Put in Receiver Test Mode.<br>RF GEN<br>FREQ 926.1000 MHz<br>LEVEL 60 dBμ V<br>SET MOD<br>FREQ 1.000 kHz<br>LEVEL 5.000 kHz<br>High Frequency Cable to RF connector.<br>Audio Cable positive lead to **TIP** isolation capacitor, negative lead to **RING** isolation capacitor, BNC end to AF INPUT connector.<br>**Telephone Analyzer**<br>**Corded Telephone**<br>Take phone off hook |
| PROCEDURE | Adjust **VR402** until **AF VOLTS** equals **-17.5 dBV +/- 2 dB (-15.5 dBm +/- 2 dB)**<br><br>Note<br>You do not need to take the corded phone off hook, but you will hear the 1kHz tone. This will insure that your setup is probably working. |

| ADJUSTMENT ITEM DESCRIPTION | (C)<br>RX Input<br>(Line Modulation) |
|---|---|
| EQUIPMENT | **Marconi**<br>SETUP Place in Transmitter Test mode.<br>**AF GEN**<br>**FREQ 1.000kHz**<br>**LEVEL -25 dBm (44mV) at 600 Ω Load**<br>High Frequency Cable to RF connector.<br>**Telephone Analyzer**<br>**Corded Phone**<br>Take phone off hook<br>**KX-TC1400B/KX-TC1400W**<br>**Handset** Placed in TEST mode by inserting battery while pressing 1, 9 and *keys, then pressing TALK. |
| PROCEDURE | Adjust **VR401** until **MOD LEVEL** equals **7.3 kHz+/-1.0 kHz**<br>Notes<br>You need to place the HANDSET in TEST mode to drown spurious RF signals being picked up at the BASE UNIT. By shorting the MIC leads insures that you are sending an unmodulated RF signal. You need the corded phone off hook to keep the telephone analyzer from sending a dial tone to the unit under test. The dial tone adds to the MOD LEVEL value greatly. |

| ADJUSTMENT ITEM DESCRIPTION | (D)<br>RX sensitivity conformation and squelch adjustment |
|---|---|
| EQUIPMENT | **Marconi**<br>SETUP Put in Receiver Test Mode.<br>RF GEN<br>FREQ 926.1000 MHz<br>LEVEL 60 dBμV<br>SET MOD<br>FREQ 1.000 kHz<br>LEVEL 5.000 kHz<br>High Frequency cable to left RF Connector.<br>Audio Cable positive lead to **TIP** isolation capacitor, negative lead to **RING** isolation capacitor, BNC end to AF INPUT connector.<br>**Oscilloscope**<br>SETUP X1 probe connected to INPUT 1. Probe ground connected to **GND.**<br>TIME/DIV 1ms<br>VOLT/DIV 1V<br>Auto trigger<br>**Telephone Analyzer**<br>**Corded Phone**<br>Take off hook |
| PROCEDURE | On Marconi, press SINAD until the display shows the SINAD value and press **dB.** Then press RF **GEN** and **LEVEL.** Lower RF **GEN LEVEL** at SINAD 12 dB and confirm that RF GEN LEVEL is less than **+2 dBμV (+8 dBμVem*f*).** When level is more than +2 dBμV (+8 dBμVem*f*), change RF unit.<br>Attach the oscilloscope probe to SQ POINT. When RF GEN LEVEL is set at +5 dBμV (+11 dBμVem*f*), confirm that SQ POINT is Low.<br>After that, set RF GEN LEVEL at -17 dBμV (-11 dBμVem*f*), and confirm that the SQ POINT is High.<br>When level is NG, change RF unit. |

Once aligned, please reassemble the base unit. Also take off the back of the HANDSET and unsolder the MIC lead short wire if you previously installed it.

## 5.12. Base Unit Reference Drawing



# 6 HOW TO CHECK THE RF UNIT

Factory supply only assembled RF unit for base unit and Handset of KX-TC1400B/KX-TC1400W. (Factory does not supply each parts on RF Unit.)

## 6.1. Handset

1. Warm up the Marconi Radio Tester for at least 30 minutes to allow internal crystal oscillation to become stable.
2. Refer to figures right for Handset wire connections.
3. Disconnect the Handset antenna from the PCB. If you allow the antenna to remain and be a load, the readings will be wrong.
4. Supply DC 3.9V Handset PCB using a DC power supply.
5. Solder RF cable to TP-ANT and TP-GND and connect BNC side to Marconi. Use 100 W max. RF Input.
6. Press **TALK**, then press "**5**", "**8**" and "**0**" simultaneously.
7. Press **TALK**. (Base Unit power is off)

### 6.1.1. Carrier frequency check:

1. Set Marconi to Transmit Test (press **TX TEST** button).
2. Check TX Frequency =**926.100 MHz+/-3.0 kHz**.
3. When value if off, adjust **VRfreq**.
4. If can't adjust replace RF Unit.

### 6.1.2. Transmit power check:

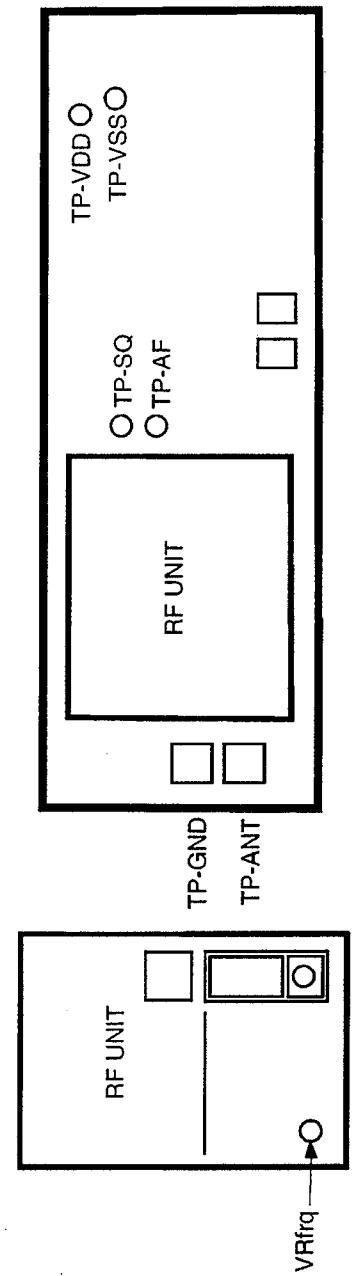
1. Press **dBm** button on Marconi.
2. Check Marconi TX Power reading. It should equal **-3.5 dBm+/-4 dBm** (-7.5 dBm ~ +1.5 dBm).
3. When value is over, replace RF Unit.

### 6.1.3. Receiving sensitivity check:

1. Connect audio cable BNC side to AF INPUT in Marconi and other side to TP-AF and TP-GND.
2. Set Marconi to **RX TEST** mode. Enter the following setting:
   a. Frequency = **902.100 MHz**
   b. Level = **60 dBµV**
   c. Set Modulation = **1.000 kHz**
   d. Level = **6.000 kHz**
3. Press the **SINAD** button on Marconi until the display shows SINAD value. Press the **dB** button.
4. Press the **RF GEN** and **LEVEL** button.
5. Using the **VARIABLE** knob on Marconi decrease RF GEN LEVEL value until **SINAD** value is **12 dB**.
6. Check the **RF GEN LEVEL**. This should be **less than +1 dBµV**(+7 dBµVemf). When value is over, replace RF Unit.

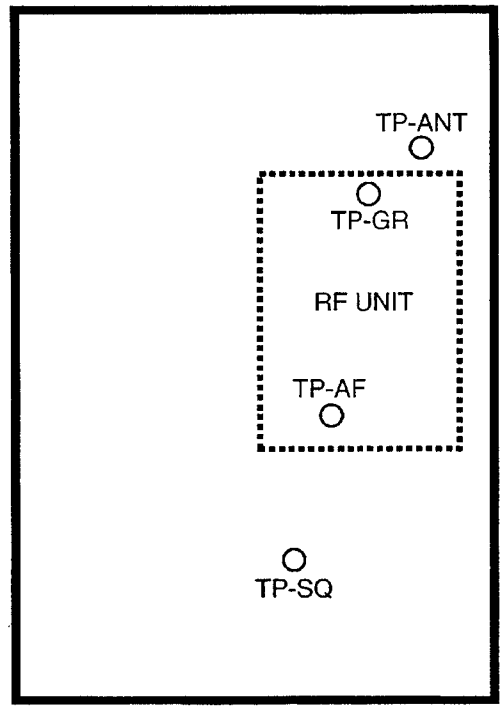
### 6.1.4. Squelch check:

1. Connect scope probe (X1) lead to TP-SQ, negative to TP-VSS and BNC end to scope.
2. Set scope to the following codition: TIME/DIV = 1 msec, VOLT/DIV = 1 V
3. Set **RF GEN LEVEL** to **+5 dBµV**(+11dBµVemf). Check scope voltage is **LOW**.
4. Set **RF GEN LEVEL** to **-17 dBµV**(-11dBµVemf). Check scope voltage is **HIGH**.
5. When scope voltage is wrong, replace RF Unit.



## 6.2. Base Unit

1. Please refer to figures right for base unit wire connection.
2. Solder wire connections D902. (Refer to **5.12. Base Unit Reference Drawing**.)
3. Connect the AC Adaptor (KX-TCA1-G) to base unit.
4. Press HANDSET LOCATOR twice to set base to test mode.




### 6.2.1. Carrier frequency check:

1. Solder RF cable to TP-ANT and TP-GR.
2. Set Marconi to Transmit Test mode by pressing **TX TEST**.
3. Check TX Frequency as shown on CRT. This should be **902.100 MHz+/-3 kHz**.
4. Adjust value when this is above **902.100 MHz+/-3 kHz**. If can't adjust replace RF Unit.

### 6.2.2. Transmit power check:

Check **TX POWER** reading equals to **-10 dBm+/-4 dBm** (reading should -14 dBm to -6 dBm).

If reading is given in µW, press **dB** button.

### 6.2.3. Receiving sensitivity check:

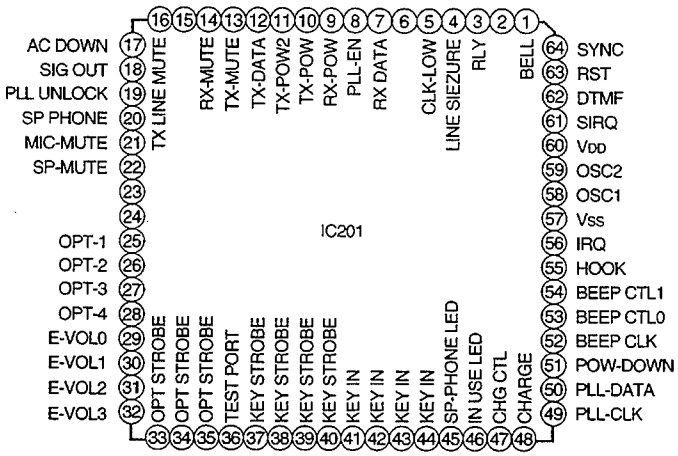
1. Connect audio cable positive lead to TP-AF, negative lead to TP-GR and BNC end to AF INPUT.
2. Set Marconi to Receiver Test mode by pressing **RX TEST**. Enter the following value:
   a. RF Frequency = **926.100 MHz**
   b. LEVEL = **60 dBµV**
   c. Modulation Frequency = **1.000 kHz**
   d. LEVEL = **5.000 kHz**
3. Press **SINAD** button until the display shows the SINAD value and press **dB** button.
4. Press **RF GEN** and **LEVEL** buttons. Using the **VARIABLE** knob. Decrease RF GEN LEVEL until **SINAD** value is **12 dB**.
5. Check the **RF GEN LEVEL** equals **less than +2 dBµV**(+8 dBµVemf). When value is over, change RF Unit.

### 6.2.4. Squelch check:

1. Keep same RX TEST settings as in **Receiving Sensitivity Check**.
2. Connect scope (X1) positive lead to TP-SQ, negative lead to TP-GR and BNC end to scope. Set scope to following condition.
   a. TIME/DIV =**1 msec**.
   b. VOLT/DIV = **1 V**
3. Set **RF GEN LEVEL** to **+5 dBµV** (+11 dBµVemf). Check scope voltage is **LOW**.
4. Set **RF GEN LEVEL** to **-17 dBµV** (-11 dBµVemf). Check the scope voltage is **HIGH**.
5. When value is over, replace RF Unit.

# 7 CPU DATA (Base Unit)

## 7.1. IC201

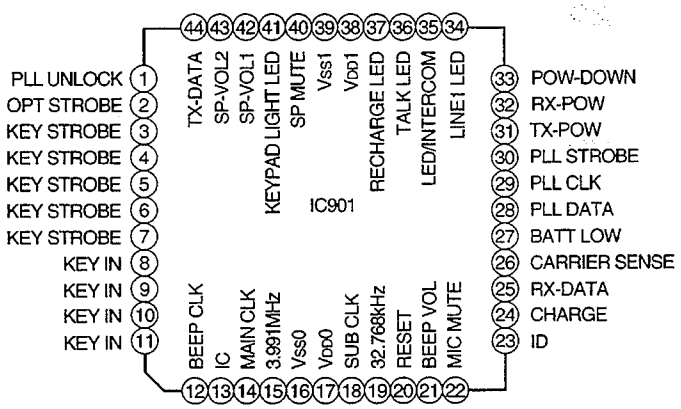



| Pin | Description | I/O | High | High-Z | Low |
|---|---|---|---|---|---|
| 1 | BELL | I | Hi | - | Lo |
| 2 | Not Used | O | - | - | Fixed |
| 3 | RLY | O | ON | - | OFF |
| 4 | LINE SIEZURE | O | ON | - | OFF |
| 5 | CLK LOW | O | - | Normal | LOW |
| 6 | Not Used | O | - | - | Fixed |
| 7 | RX DATA | I | DATA | - | DATA |
| 8 | PLL-EN | O | ON | - | OFF |
| 9 | RX POWER | O | OFF | - | ON |
| 10 | TX POWER | O | OFF | - | ON |
| 11 | TX POWER2 | O | OFF | - | ON |
| 12 | TX DATA | O | DATA | - | DATA |
| 13 | TX MUTE | O | ON | - | OFF |
| 14 | RX MUTE | O | ON | - | OFF |
| 15 | Not Used | O | - | - | Fixed |
| 16 | TX LINE MUTE | O | ON | - | OFF |
| 17 | AC DOWN | I | - | - | - |
| 18 | SIG OUT | I | Weak Electric Field | - | Strong Electric Field |
| 19 | PLL UNLOCK | I | Lock | - | Unlock |
| 20 | SP PHONE | O | - | Normal | Active |
| 21 | MIC MUTE | O | ON | - | OFF |
| 22 | SP MUTE | O | ON | - | OFF |
| 23 | Not Used | O | - | - | Fixed |
| 24 | Not Used | O | - | - | Fixed |
| 25 | OPT-1 | I | None | - | Provided |
| 26 | OPT-2 | I | None | - | Provided |
| 27 | OPT-3 | I | None | - | Provided |
| 28 | OPT-4 | I | None | - | Provided |
| 29 | E-VoL0 | O | - | Lo:Min ~ Hi:Max | |
| 30 | E-VoL1 | O | - | Hi Hi | |
| 31 | E-VoL2 | O | - | Lo Hi | |
| 32 | E-VoL3 | O | - | Lo Hi | |

| Pin | Description | I/O | High | High-Z | Low |
|---|---|---|---|---|---|
| 33 | OPT STROBE | O | - | Normal | Active |
| 34 | OPT STROBE | O | - | Normal | Active |
| 35 | OPT STROBE | O | - | Normal | Active |
| 36 | TEST PORT | I | None | - | Provided |
| 37 | KEY STROBE | O | - | - | Normal |
| 38 | KEY STROBE | O | - | Active | Normal |
| 39 | KEY STROBE | O | - | Active | Normal |
| 40 | KEY STROBE | O | - | Active | Normal |
| 41 | KEY IN | I | OFF | - | ON |
| 42 | KEY IN | I | OFF | - | ON |
| 43 | KEY IN | I | OFF | - | ON |
| 44 | KEY IN | I | OFF | - | ON |
| 45 | SP-PHONE LED | O | - | OFF | ON |
| 46 | INUSE LED | O | - | OFF | ON |
| 47 | CHG CTL | O | Ultra | - | Trickle |
| 48 | CHARGE | I | NONE CHARGE | - | CHARGE |
| 49 | PLL CLOCK | O | Active | Normal | Active |
| 50 | PLL DATA | O | Active | Normal | Active |
| 51 | POWER DOWN | I | Normal | - | DOWN |
| 52 | BEEP CLOCK | O | Active | Normal | Active |
| 53 | BEEP CTL0 | O | - | Hi:Hi Hi:Lo Lo:Reception Tone | |
| 54 | BEEP CTL1 | O | - | Hi Lo Hi | |
| 55 | HOOK | I | OFF HOOK | - | HOOK |
| 56 | EXTERNAL INTERRUPT | I | Normal | - | - |
| 57 | GND | | - | - | Normal |
| 58 | OSC1 | I | Active | - | Active |
| 59 | OSC2 | O | Active | - | Active |
| 60 | POWER SUPPLY | | Normal | - | - |
| 61 | EXTERNAL INTERRUPT | I | Normal | - | - |
| 62 | DTMF | O | Active | Normal | Active |
| 63 | RESET | I | Normal | - | Reset |
| 64 | SYSTEM SYNC. IDLE | O | Active | - | Active |

# 8 CPU DATA (Handset)

## 8.1. IC901

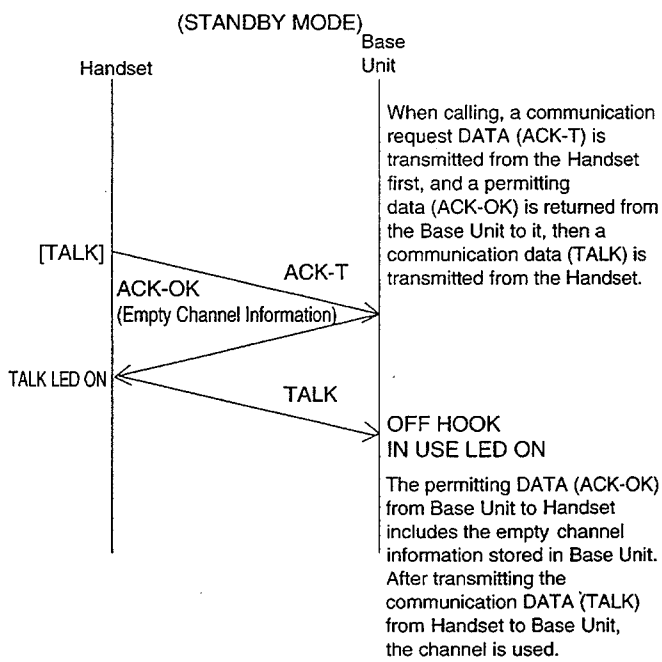



| Pin | Description | I/O | High | High-Z | Low |
|---|---|---|---|---|---|
| 1 | PLL UNLOCK | I | Lock | | Unlock |
| 2 | OPTION STROBE | O | Normal | | (Active) |
| 3 | KEY STROBE | I/O | | (Active) | Normal |
| 4 | KEY STROBE | I/O | | (Active) | Normal |
| 5 | KEY STROBE | I/O | | (Active) | Normal |
| 6 | KEY STROBE | I/O | | (Active) | Normal |
| 7 | KEY STROBE | I/O | | (Active) | Normal |
| 8 | KEY IN | I | Normal | | Key In |
| 9 | KEY IN | I | Normal | | Key In |
| 10 | KEY IN | I | Normal | | Key In |
| 11 | KEY IN | I | Normal | | Key In |
| 12 | BEEP CLOCK | O | Normal | | (Beep) |
| 13 | IC | - | | | |
| 14 | MAIN CLOCK | - | | | |
| 15 | 3.991MHz | I | | | |
| 16 | Vss0 | - | | | |
| 17 | VDD0 | - | | | |
| 18 | SUB CLOCK | - | | | |
| 19 | 32.768kHz | I | | | |
| 20 | RESET | I | Normal | | Reset |
| 21 | BEEP VOLUME | O | Low | | High |
| 22 | MIC MUTE | O | Mute | | Unmute |
| 23 | ID(CONTROL) | I | Normal | | (DATA) |
| 24 | CHARGE | I | Off CHARGE | | CHARGE |
| 25 | RX DATA | I | Normal | | (DATA) |
| 26 | CARRIER SENSE | I | Strong Electric Field | | Weak Electric Field |
| 27 | BATTERY LOW | I | Battery High | | Battery Low |
| 28 | PLL DATA | O | Normal | | (DATA) |
| 29 | PLL CLOCK | O | Normal | | (Clock) |
| 30 | PLL STROBE | O | Latch | | Normal |
| 31 | TX POWER | O | OFF | | ON |
| 32 | RX POWER | O | OFF | | ON |

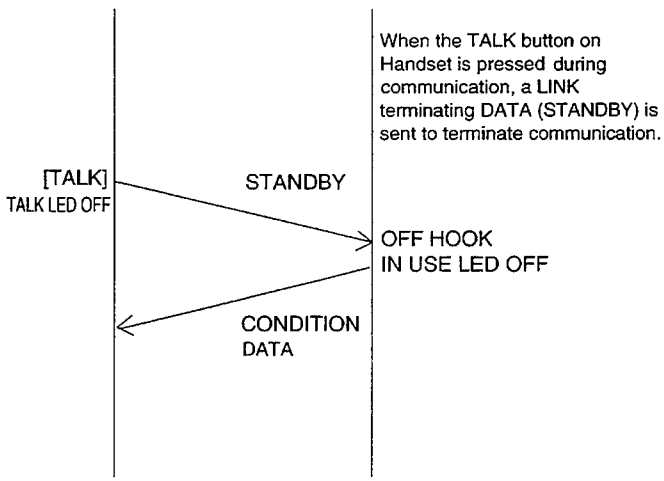
| Pin | Description | I/O | High | High-Z | Low |
|---|---|---|---|---|---|
| 33 | POWER DOWN | I | Normal | | POWER DOWN |
| 34 | LINE1 LED | O | | | Normal |
| 35 | LINE2 LED/ INTERCOM | I/O | | OFF | ON |
| 36 | TALK LED | I/O | | OFF | ON |
| 37 | RECHARGE LED | I/O | | OFF | ON |
| 38 | VDD1 | - | Normal | | |
| 39 | Vss1 | - | | | Normal |
| 40 | SP MUTE | O | Mute | | Unmute |
| 41 | KEYPAD LIGHT LED | O | ON | | OFF |
| 42 | SP VOL1 | O | Low Low | Low Medium | High High |
| 43 | SP VOL2 | O | Low (-7dB) | High (0dB) | Low (+7dB) |
| 44 | TX DATA | O | High | | Normal |

# 9 EXPLANATION OF CPU DATA COMMUNICATION

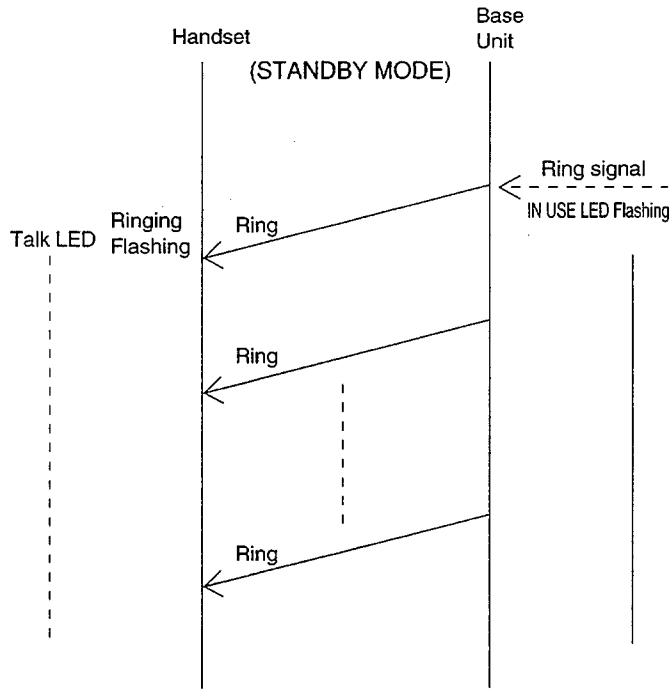
## 9.1. Calling


(STANDBY MODE)
Handset
Base Unit
When calling, a communication request DATA (ACK-T) is transmitted from the Handset first, and a permitting data (ACK-OK) is returned from the Base Unit to it, then a communication data (TALK) is transmitted from the Handset.
[TALK]
ACK-T
ACK-OK
(Empty Channel Information)
TALK LED ON
TALK
OFF HOOK
IN USE LED ON
The permitting DATA (ACK-OK) from Base Unit to Handset includes the empty channel information stored in Base Unit. After transmitting the communication DATA (TALK) from Handset to Base Unit, the channel is used.

## 9.2. To Terminate Communication


When the TALK button on Handset is pressed during communication, a LINK terminating DATA (STANDBY) is sent to terminate communication.
[TALK]
TALK LED OFF
STANDBY
OFF HOOK
IN USE LED OFF
CONDITION DATA

## 9.3. Ringing




After detecting the Ring signal from circuit, Base Unit sends a ring signal DATA (Ring), then the Handset starts ringing.

## 9.4. Ports for Transmitting and Receiving of Data

**Handset:**

transmitting ... 44 Pin receiving ... 25 Pin

**Base Unit:**

transmitting ... 12 Pin receiving ... 7 Pin

## 9.5. Waveform of DATA Used for Cordless Transmission and Reception

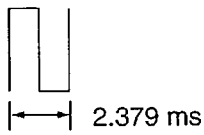
The DATA which is transmitted from the Handset to the Base Unit is combination of DATA 0, DATA 1, DATA Delimt, Pre data and End data.

The DATA which is transmitted from the Base Unit to the Handset is combination of DATA 0, DATA 1, DATA Delimt, Pre data and End data.

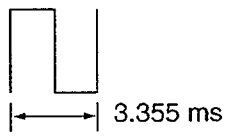
### 9.5.1. Handset

**Transmitting DATA Format**

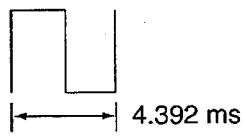
DATA 0



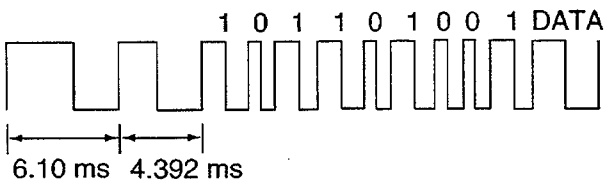

DATA 1




DATA Delimit

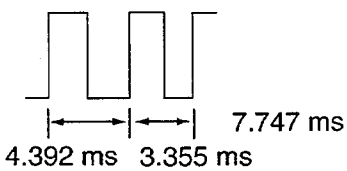



Pre data




41.175 ms

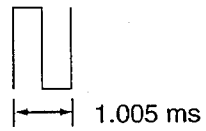
END data




### 9.5.2. Base Unit

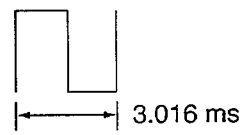
**Transmitting DATA Format**

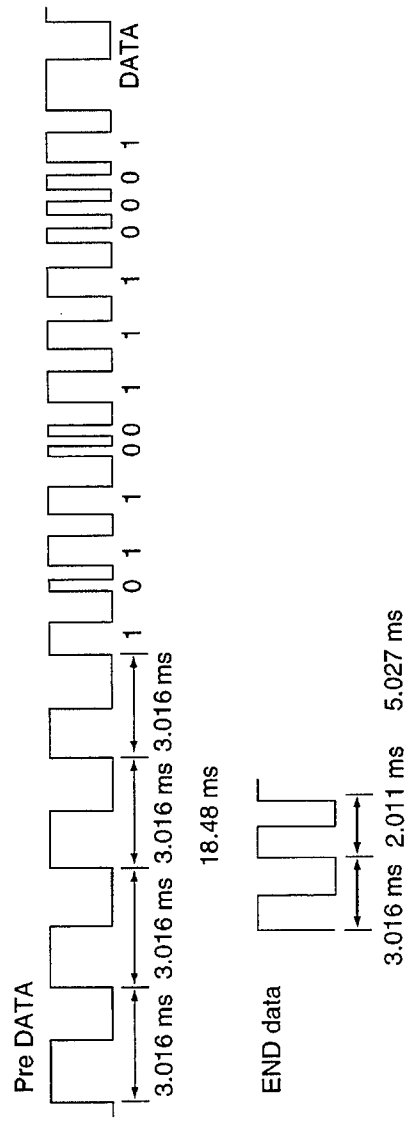
DATA 0



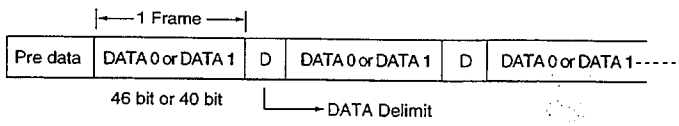

DATA 1

DATA Delimit



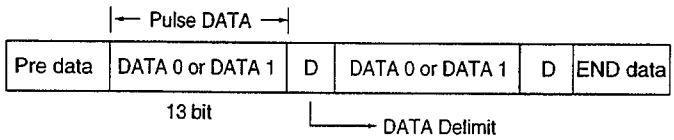



## 9.6. When LINKing



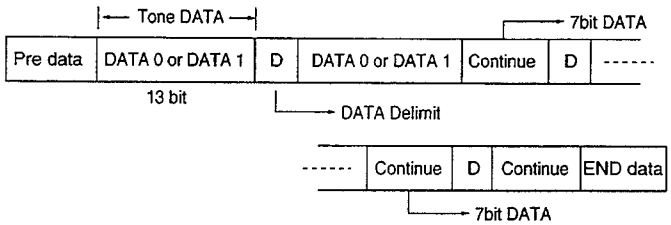

When LINKing from the Handset (when becoming STBY to TALK), DATA is transmitted in above format. The combined portion of DATA 0 and DATA 1 is transmitted in LINK requesting DATA (40bit) format first. Then, when LINK OK (ACK-OK) DATA (46bit) is returned from the Base Unit, it is sent as LINK from DATA after changing the combination of DATA 0 and DATA 1. And the DATA Delimit is between each Frame as a stop.
The contents of LINK requesting DATA and LINK form DATA are different depending on each operation.

## 9.7. Pulse Dial




When executing Pulse Dial, the Pulse Dial DATA is transmitted from the Handset to the Base Unit in above format. The combination of DATA 0 and DATA 1 are changed by each Dial No. And the DATA Delimt is between each Frame as a stop. The number of Frame is 2.

## 9.8. Tone Dial




When executing Tone Dial, Tone Dial DATA is transmitted from the Handset to the Base Unit in above format. The DATA is changed by Dial No. as same as Pulse Dial. When Tone Dialing, DATA (Continue DATA) that the key is pressed continuously is sent to the Base Unit during the key is pressed. When depressing the key, the END data is sent finally.

**Note:**

1,000,000 kinds of the security code are available for the mode KX-TC1400B/KX-TC1400W. Each time the Handset is set on the cradle of the base unit (for charging), the CPU automatically change the security code.

# 10 FREQUENCY TABLE (MHz)

| CH | Base Unit TX<br>Handset RX | Base Unit RX<br>Handset TX |
|---|---|---|
| 1 | 902.100 MHz | 926.100 MHz |
| 2 | 902.150 MHz | 926.150 MHz |
| 3 | 902.200 MHz | 926.200 MHz |
| 4 | 902.250 MHz | 926.250 MHz |
| 5 | 902.300 MHz | 926.300 MHz |
| 6 | 902.350 MHz | 926.350 MHz |
| 7 | 902.400 MHz | 926.400 MHz |
| 8 | 902.450 MHz | 926.450 MHz |
| 9 | 902.500 MHz | 926.500 MHz |
| 10 | 902.550 MHz | 926.550 MHz |
| 11 | 902.600 MHz | 926.600 MHz |
| 12 | 902.650 MHz | 926.650 MHz |
| 13 | 902.700 MHz | 926.700 MHz |
| 14 | 902.750 MHz | 926.750 MHz |
| 15 | 902.800 MHz | 926.800 MHz |
| 16 | 902.850 MHz | 926.850 MHz |
| 17 | 902.900 MHz | 926.900 MHz |
| 18 | 902.950 MHz | 926.950 MHz |
| 19 | 903.000 MHz | 927.000 MHz |
| 20 | 903.050 MHz | 927.050 MHz |
| 21 | 903.100 MHz | 927.100 MHz |
| 22 | 903.150 MHz | 927.150 MHz |
| 23 | 903.200 MHz | 927.200 MHz |
| 24 | 903.250 MHz | 927.250 MHz |
| 25 | 903.300 MHz | 927.300 MHz |
| 26 | 903.350 MHz | 927.350 MHz |
| 27 | 903.400 MHz | 927.400 MHz |
| 28 | 903.450 MHz | 927.450 MHz |
| 29 | 903.500 MHz | 927.500 MHz |
| 30 | 903.550 MHz | 927.550 MHz |

K, (Q),
KXTC1400B-AK
KXTC1400W-AK
Printed in Japan